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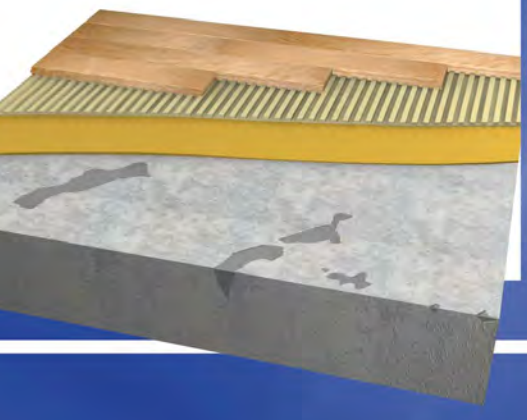

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LETTER *From The Editor-In-Chief*

The downturn in the real estate market is shaking up the economy and making it very difficult for many people to sell a house. To sell fast and at top dollar in a down market, a little cosmetic surgery to the facade may first be required. Potential buyers are not typically in the market for a string of upcoming repair projects, so a turnkey home that looks ready for new tenants will sell faster than one that looks like it needs work.

Atlanta, Georgia-based real estate expert, Stokely Weinberg, stresses the importance of staging the home, noting that bringing a house up to sales-ready condition doesn't have to be an expensive venture. "Homeowners need to make their property attractive, clean, roomy in appearance and desirable to potential buyers," says Weinberg.

A good starting point is to make any repairs to obvious eyesores on the exterior. Replace damaged siding panels or loose bricks and patch cracks in concrete. Then wash the entire exterior just as you would your automobile.

A new coat of paint can also do wonders, brightening colors and renewing the home's appearance. One important area is the front door. This is where potential buyers enter the home, and first impressions are crucial. Even if you don't paint the entire exterior of the home, touch up the front entry and surrounding areas.

Next, pull weeds and plant flowers. Blow away leaves and debris and straighten up the landscape. This boosts curb appeal, which in turn boosts interest in the house. Remember, a home reflects its occupants, so potential buyers want their new house to appear attractive to themselves as well as to their new neighbors.

It's also important to eliminate clutter from the inside. Get rid of excess furniture, clothes, books, etc. And don't forget the closets; you want all the interior spaces to appear as roomy as possible. A common mistake is having too much stuff in the house when inviting people in.

It's a tough market for real estate right now, but a few basic improvements can push your house to the top of the must-see list. And even if you're not selling, the occasional household facelift is a good idea, anyway.

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Q&A Got a ?

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Q: *On my daughter's new house I noticed the gutter had pulled away from the rotted roof framing (no fascia board was in place). Can I fix this by sistering new lumber to the rafter and re-fastening the gutter?*

A: If the rafter tails are getting wet and staying wet, then you have to address that issue first or the problem will recur. Pull off the entire gutter and inspect all the rafter ends. The problem could be an improper drip edge or maybe the downspouts are clogged. After addressing that issue, cut out the rotted wood until you reach good wood. Sister on some new rafter tails, nail on a fascia board and wrap it in soffit and fascia. Then reinstall the gutter.

Q: *What's the difference between MIG and TIG welding? And what's the best choice for a DIY'er?*

A: Most professionals consider TIG (tungsten inert gas) to be the "elite" of all welding processes. A TIG weld is typically neater, stronger and easier to control than with other processes. The least expensive TIG machines make a gas-protected weld puddle, but heat is not adjustable. Foot-pedal TIG machines allow the welder to adjust the heat with the pedal. However, a TIG unit can be the most expensive of all welders.

Whereas a TIG setup works with a torch (electrode) to melt a welding rod with pinpoint accuracy, MIG (metal inert gas) welds utilize a wire-feed system. These machines are easy to learn but tricky to master. For $300 you can find a MIG welder at the hardware store, plug into a 110-volt outlet and begin welding immediately. These are great for building a grill or shop equipment. The MIG gun feeds flux-cored wire into the weld, and the weld begins as soon as you squeeze the trigger. However, due to all the smoke and sparks, the impeded visibility makes it difficult to achieve a truly clean weld. Plus, smaller MIG machines are limited to thin metals, and you'll probably have to deal with a lot of weld spatter.

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Q: *I'm remodeling a "fix 'er upper" and have some sagging joists in the subfloor. Is this a problem I can repair myself?*

A: You should add blocking to the joist to support the subfloor and stop movement in the floor. Measure and cut a 2-by-4 block that is at least 2 feet longer than the sagging joist area. Liberally apply construction adhesive to the top and side of the 2-by-4 and install it lengthwise against the joist, flush with the underside of the subfloor. Every 12 inches along the 2-by-4, predrill screw holes to prevent splitting. Then drive 2-1/2-inch wood screws at a slightly upward angle through the blocking and into the joist, securing it tightly against the subfloor.

Q: *We have some water damage in a plaster ceiling. Any advice on how to repair it?*

A: Plaster can be messy to work with, because it is embedded in lath over studs or joists. First things first: Fix the leak. Next, secure the solid, stable plaster around the damaged area by using plaster washers. Then, outline the damage by marking off a square perimeter using a masonry bit to drill a series of holes around the area. Connect the holes with a chisel, and then remove the damage by carefully chipping the plaster away from the lath. Replace the removed square with a drywall patch of appropriate thickness cut to fit the void. Fasten drywall screws every 6 inches along the edges and every 8 inches along a joist. Then finish with joint tape and drywall mud as you would with any drywall installation. **EHT**

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Chainsaw Rx

A guide to basic chainsaw maintenance

By Larry Walton | Photos by Tim Walton

My sons think I try to use a chainsaw on every project, and I admit it gets used a lot on our jobs. It may be because of my years spent logging in the Oregon rain forests. Of course, it could also be a reaction to all the years I've spent making precise cuts doing trim work, so the half-inch-is-close-enough mode of chainsaw work is appealing.

To me, big wood calls for a chainsaw. Fence posts, deck frames, house beams, wood sheds, boat docks, axle blocks, heavy pruning, brush clearing, trail building and firewood are often made quicker and easier with a chainsaw.

Even if you show restraint and get out your chainsaw only occasionally, you still want it to run when you pull the starter cord. Proper maintenance greatly increases your odds. Additionally, your saw will be safer to operate and last for many years if it's properly maintained.

Chainsaw maintenance comes down to a few basic concepts: clean, inspect, replace, adjust and lubricate.

As you go through your maintenance checklist, inspect the operating components of the saw. Always keep an eye out for worn, broken or missing parts. Pay particular attention to safety features such as the throttle trigger, shut-off switch and chain brake.

CLEANING

To clean the saw I use the saw's multi-tool (screwdriver/wrench) to remove the bulk of sawdust, and then hit it with some compressed air. You can use soap and water as well. Either way, you'll need to do some additional cleaning when you start removing parts, because sawdust combined with pitch and bar oil tends to get packed into tight spaces.

Remove the top cover of the engine housing to expose the carburetor and the top of the cylinder head. This gives you access to both the air filter and spark plug. Remove the air filter, clean it (or replace it) and re-install it. You can use compressed air or soap and water to clean most filters, but make sure the filter is thoroughly dry before re-installing.

Remove the spark plug and inspect it. Replace it or clean off oil buildup and carbon deposits, set the gap and re-install.

Note the direction of the lettering on the bar. Are the words and logos upright or upside-down? Remove the clutch cover, chain and bar. Clean everything in this area paying particular attention to the chain oil ports and the chain brake.

Thoroughly inspect the bar for bends, nicks or burrs. Clean the chain groove and re-install the bar turned 180 degrees from the most recent orientation. For most bar designs, periodically flipping the bar helps promote even wear.

Inspect the chain for damage and replace or re-install. Install the clutch cover/brake/chain adjustment assembly and adjust the chain tension. Sharpen the chain and file the depth gauges.

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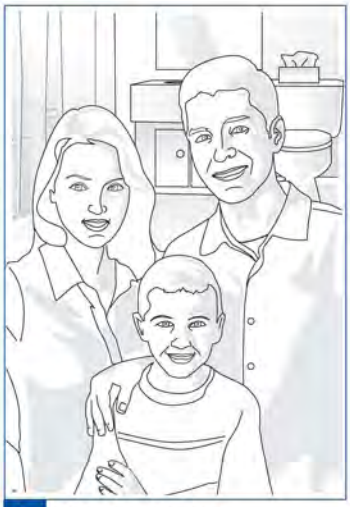

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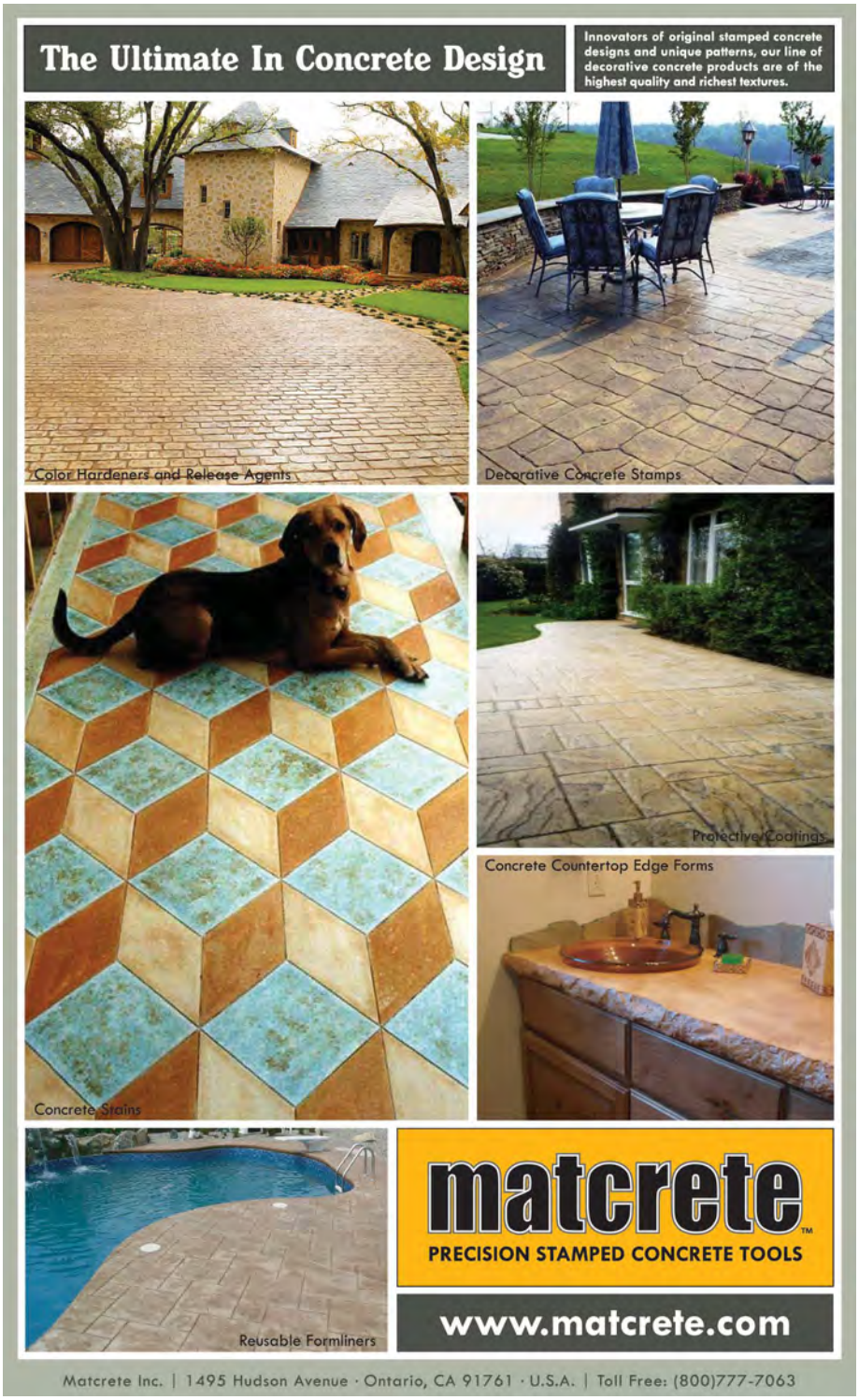
LUBRICATION

The engine oil for a two-stroke goes right into the cylinder with the fuel. Remember to add two-stroke oil to your gas at the proper ratios, and stress this point to anyone who borrows your saw.

Chain lubrication is also very important. Chainsaws are designed with automatic oilers, which have reservoirs that should be filled each time you fill the saw's gas tank. Pay attention to the chain to make sure it is getting oiled during use.

As with your truck, major service items come up less often than those we've mentioned. Major service items include checking the fuel filter, cleaning the carburetor, and flushing out the fuel and oil tanks.

Be sure to drain the gas tank and let the engine consume any residual fuel before storing your saw for the season. Take care of your tools, and they'll take care of you. **EHT**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TWIN TANKS

Like most gas powered machines, keeping a chainsaw lubricated is a top priority. The two-stroke engine does not have an automatic oil injector, so the engine lube oil must be added to the gas.

Pre-measured amounts of two-stroke oil help get the ratios right for mixing small amounts of chainsaw gas. Make sure you put the correct number of gallons in the gas can for the amount of oil used.

Fill the bar oil tank every time you fill the fuel tank. This is the lubrication for chain's link-to-link connections and for the contact points where the chain touches the bar.

You can make sure the oiler is working by holding the throttle open and pointing the saw at a clean piece of wood. The saw should shoot a perceptible streak of oil onto the wood.

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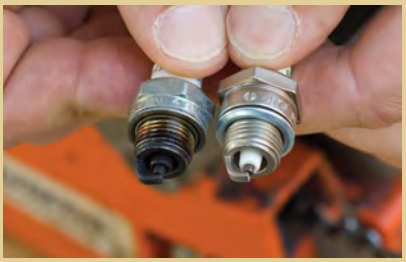
CHAINSAW Rx

Most chainsaw maintenance can be done with the saw's multi-tool, files, an air hose and a rag.

Remove the top cover of the engine housing to expose the carburetor and the top of the cylinder head. This gives access to the air filter and spark plug. Clean the air filter and carefully inspect it for damage.



If you are not familiar with how the electrode and ground should look, compare the spark plug with the new spare.

If the electrode is damaged, install a new or cleaned spark plug.

Loosen (but do not remove) the nuts that hold the rear sprocket/chain brake assembly in place.

Turn the chain tension adjustment screw to create slack in the chain. This takes a little tension off the adjustment pin to allow for removal of the cover.

Remove the cover, which on the Husqvarna includes the chain brake assembly. Note the buildup of sawdust and oil.

Slide the bar back toward the engine to create maximum slack in the chain. To remove, first take the chain off the front of the bar. Then carefully take it off the drive sprocket and work it around the clutch assembly.

With the chain set aside, remove the bar, again noting its orientation (up or down).

Use a stick or screwdriver to scrape the sawdust and oil buildup out of the area near the clutch and sprocket assembly.

Use an air hose and nozzle to blast out the remainder of the sawdust. As you clean these usually dirty areas of the saw, watch for worn, cracked or bent parts like this chain guard, which obviously took a hit from a thrown chain.

Clean and inspect the bar. Watch for any bends or nicks in the metal.

Make sure there are no burrs or obstructions in the bar groove.

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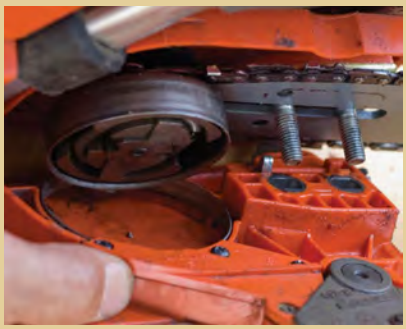
CHAINSAW Rx

With everything cleaned, it's much easier to see potential problems.

Put the chain around the sprocket, then put the bar in place. Now you can start aligning the chain with the bar groove.

With the chain riding in the bar, extend the bar away from the engine to pick up the slack in the chain. Now you're ready to line the tension pin with the hole in the bar.



Pay attention to how the parts line up as you put the cover back on. The brake band needs to fit around the clutch, and the tension pin should be pointing at the opening in the bar.

With the clutch cover back in place, apply the nuts "finger tight" to allow the bar to slide for chain adjustment. Adjust the chain so the guides are just inside the bar, but no tighter.

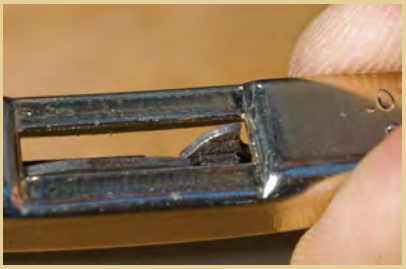
It may help to support the saw at the bar tip during chain adjustment to find the best tension location.

This tooth sustained some damage from a rock. It needs to be filed back until the top surface is consistently flat.

There are two important angles for sharpening a chain. First is the angle to the flat side of the bar and the other is the angle to the top of the bar.

Maintain some upward pressure as needed to make sure you have only a slight hook in the vertical cutting edge on the outside of the tooth.

A file gauge can help you get the angle you need to the flat direction of the saw bar.



A depth gauge helps determine the right height for the "rakers." These little points on the chain between saw teeth keep the individual teeth from diving too deep into the wood. However, left at full height they prevent the teeth from cutting deep enough after a couple of sharpenings.

Use a flat file across the top of the depth gauge until the "raker" point is flush with the flat point on the gauge.

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CHAINSAW Rx

Make a couple of test cuts on a piece of fire wood. Cut thin slices so you can see if the cuts run parallel.

The saw should produce some nice shavings and not just fine dust.

Hold a straight edge across the cut surface. A noticeable convex or concave curve over the width of the cut indicates that the teeth on one side of the bar are cutting more aggressively than the other.

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Do-it-yourself BRICK PATIO & WALK

Build a paver path to accent your yard and add value to your home.

Brick patios, walks and garden terraces are some of the easiest-to-build home projects. They not only create a pleasurable outdoor space, but also add to the value of your home. The work, however, is fairly strenuous and the construction is permanent, so it's important to thoroughly plan the project before you begin. You don't want to tear up a brick patio just because it isn't sited properly.

First, make sure no utility lines or pipes are in the excavation area. Although you probably won't be digging very deep, these lines could be a problem. If the patio or terrace is to meet against a fence, you may wish to leave space for a raised planting bed to create a blend between the fence and the brick surface.

If trees or shrubs are in the location of the patio, simply build around them, rather than removing them. Each plant or tree should have at least 1-1/2 to 2 feet of open area around all sides so an adequate amount of moisture can reach the roots and allow them to grow. If the patio is raised and a tree is involved, create a raised well around the tree with mortared bricks to the desired height of the patio and fill with decorative gravel.

By Monte Burch

Do-it-yourself

BRICK PATIO & WALK

A brick patio can be constructed with bricks laid in a sand bed over a gravel base, or laid in a mortar bed over a concrete base. The sand/gravel-bed method is by far the easiest and most popular with do-it-yourselfers. If constructed properly, and in mild climates, a sand/gravel bed will last a long time.

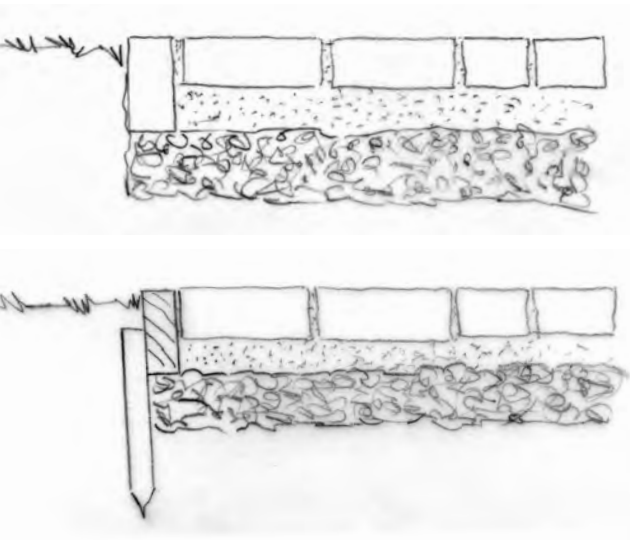
In days past, sand alone was commonly used, but this method can settle, resulting in an uneven surface. Moles also love to tunnel through the sand, with bricks heaved up by their digging. These days a gravel bed of base rock is laid first. An edging must be used to hold the bricks in place. This edging can be made of bricks set on edge, either loose or mortared on a concrete "footing." Other choices include treated 2-by-4's, landscaping timbers, even recycled railroad ties. The latter must be set to about half their depth in the ground. Round or free-form patios or walks must be edged with a flexible material. This can be plastic edging, or again bricks. Edging materials can also be used as interior dividers that divide the patio into smaller areas, creating unique designs.

Bricks may be laid on a mortar bed, or on a sand bed. The latter is the most common and the easiest to do. The bricks are supported by a gravel base, then a sand base.

PICK YOUR PAVERS

The bricks used for patios, walks and steps are called "pavers," which are different from the bricks used on house walls. Pavers do not have holes. Many older buildings, however, were constructed with solid or paver bricks, and recycled bricks from these old buildings can also be used for patios. In fact, that's what we used on our patio. Interestingly, a brick company was located in our small town around the turn of the century, and we were able to scrounge some bricks that had the town name stamped on them. Some of these old bricks, however, may be soft and crumbly, and you will have quite a lot of waste, as well as a chore in cleaning off the old mortar.

Modern paver bricks are available in a wider range of sizes and colors, as well as with a harder "finish" for a longer lasting, smoother surface. According to the folks at Acme Brick, bricks are now being produced especially for sand-based rather than mortared installations. These pavers have beveled or relieved edges that eliminate the problem



Edging is required to hold the bricks in place. This can be bricks laid on edge, treated 2x materials, landscaping timbers or railroad ties.

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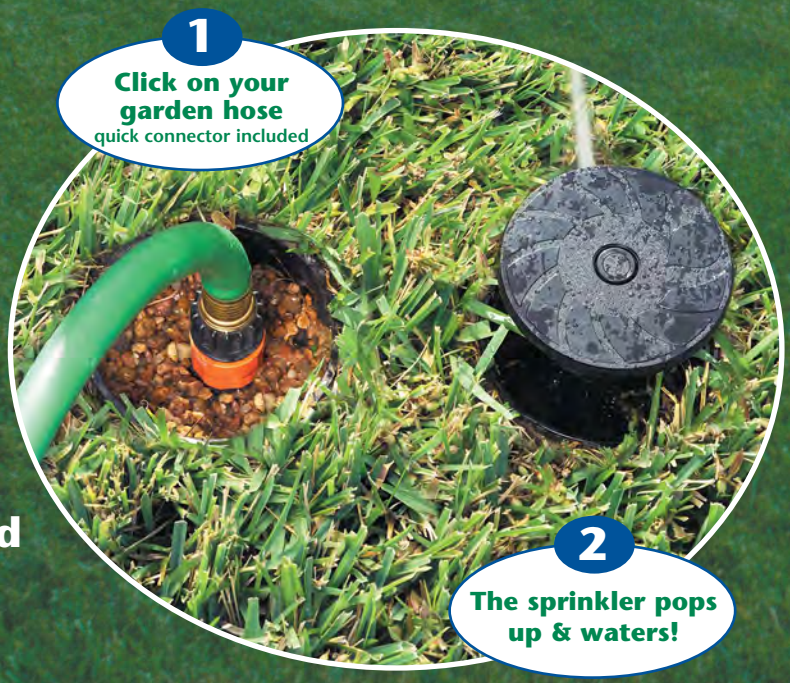

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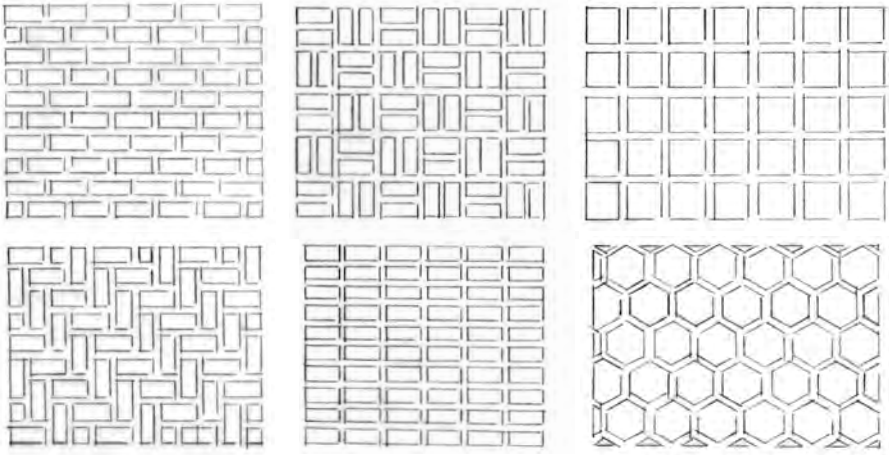
of edge chipping. And they are also made slightly irregular to provide a "handmade" look. This allows for more variety in patterns and how the bricks are laid. Some pavers are also available with interlocking designs to provide a more "secure" surface. Pavers are available in two thicknesses; 1-1/2-inches, the most commonly used size, and 2-1/2 inches, which are normally used for heavier traffic-load conditions. Pavers are also available in several sizes with 4-by-8 inches being the most common. Other sizes include 3-5/8-by-7-5/8, and 3-3/4-by-7-1/2 inches.



Bricks can be laid in various patterns. Most patterns use the common rectangular brick. Other shapes, such as square or even hexagonal, are also available.

MATERIALS

Pavers can be laid in a number of patterns. Some of these include stack-bond, herringbone,

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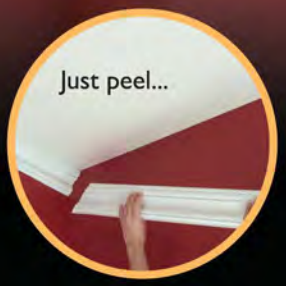

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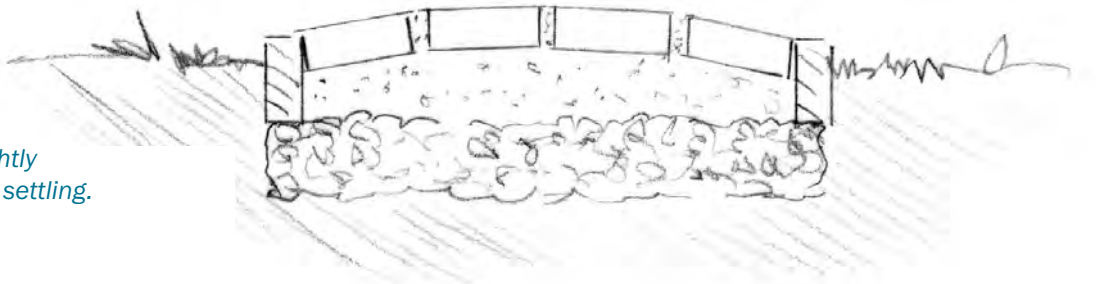

Walks should be slightly crowned to allow for settling.

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running bond and basket weave. These standard patterns can also be created in a wide number of variations as well. The first step is to lay out the patio or walk with stakes and a string line. Then measure the area in square feet to determine the amount of materials needed. Estimate the amount of pavers. For 4-by-8-inch bricks, 4.5 pavers are needed per square foot. For 3-5/8-by-7-5/8-inch bricks, 5.2 pavers are required per square foot. For 3-3/4-by-7-1/2-inch pavers, 5.1 are required per square foot. You will also need to determine the amount of edging needed, and this is determined in lineal feet. For waste, add 5 percent for uncut laid pavers and 10 percent for pavers that are to be cut.

Sand and crushed gravel are measured in cubic yards. One cubic yard equals 27 cubic feet. Normally 4 inches of gravel are used with 1- to 1-1/2 inches of sand covering that. To determine the cubic yards of sand needed for every 1 inch, multiply the square footage by .00309. To determine the amount of gravel needed for a 4-inch bed, multiply the square footage by .01235. If you are paving a heavy-traffic area, such as a driveway, you should use 8 inches of gravel. To determine the amount needed, multiply the square footage by .02469. You will also need string and wooden stakes. If using wood or rigid plastic edging, you will need to add wooden stakes or 8-inch metal spikes. Consider one

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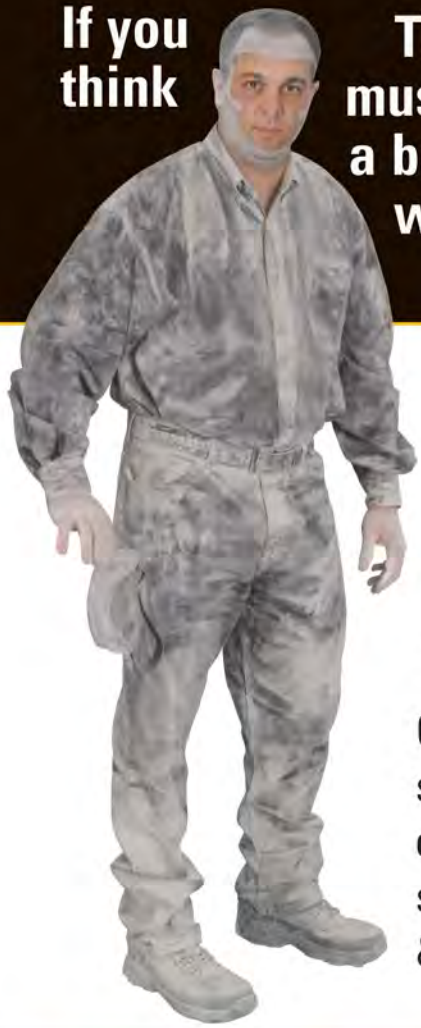

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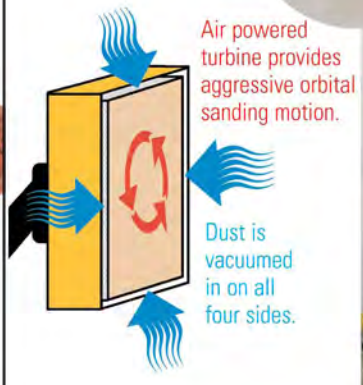

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stake or spike for each 3 feet of edging. Metal spikes can be cut from concrete reinforcing bar using a hacksaw.

TOOLS

For tools, you'll need wooden stakes and string for laying out, tape measure, carpenter's level, a wheelbarrow and flat shovel, as well as a sharp shovel for excavating. You will also need a trowel, broom, solid-tooth garden rake and a garden hose with a fine-spray nozzle. A 2-by-4 wood screed, at least 3 feet in length is also needed. You may also need an electric drill/driver for fastening wood edging in place.

Bricks are cut with a broad-blade brick chisel and mason's hammer. Or you can use a masonry saw. A plate compactor can be used to tamp bricks solidly in place. These tools can usually be rented from a local rental store, or sometimes from a brick distributor. Safety glasses and heavy-duty or leather gloves are also required.

BREAKING GROUND

With materials on hand, and the patio or walk laid out with stakes and string line, lay some bricks in the area to determine the best pattern. This will depend on the shape of the patio, as well as the brick pattern you wish to lay. Most patterns are laid out in 32- or 36-inch squares for 4-by-8 bricks. You'll need to adjust for bricks of other sizes.

Now it's time to excavate. The amount of time and effort in proper excavation will pay off in a long-lasting, good-looking patio or walk. An uneven excavation job will result in an uneven and less appealing surface. Even with proper excavation, sand will often settle in some places, requiring lifting out the bricks and adding sand to level out the spot.

Outline the patio or walk with stakes and a string line. Then excavate to the depth required. Make sure all rocks and other obstacles are removed and the area is flat and smooth. Compact the soil if it is loose.

Add the crushed gravel to a minimum depth of 4 inches, 8 inches for heavy traffic areas. Smooth and level the gravel and compact it as well.

Put the edging in place, permanently anchoring one or two sides, and temporarily anchoring the other sides.

The next step is to determine the final height of the patio surface. A surface flat with the sod can be created, and this will allow for easy mowing. In most instances, however, the surface of the patio or walk is above ground level. A paving level about two inches above ground level is the most common. This prevents grass from growing over the edge, and is fairly easy to maintain with a string trimmer. There must be enough sod or soil to support the edging. The patio should slope at least 1/4 inch per foot away from any permanent structures such as house foundations.

Using a sharp shovel, cut down through the sod around the outline of the patio or walk. Then, using a flat shovel, remove the sod and amount of soil required for the depth determined for the gravel and sand bed plus the bricks. In compacted, hard surface areas you may need to use

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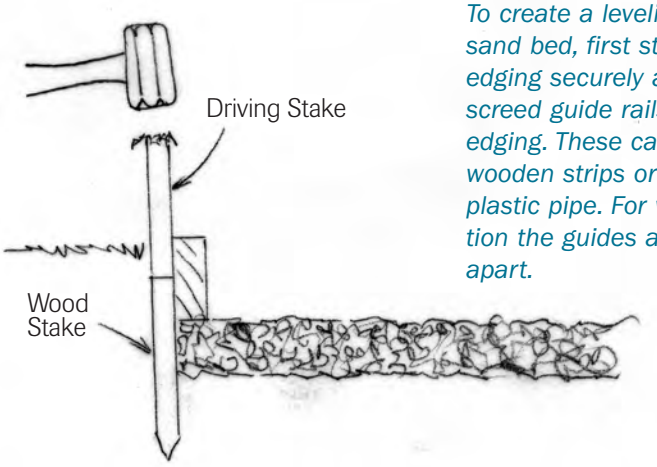
a pick to break through and loosen the soil. Remove all rocks, roots and debris from the excavated area. Check the slope of the excavation to ensure proper drainage. In most instances you will not have a perfectly flat surface, but may end up with humps and depressions. If you must fill in any depressions, then make sure they are well tamped and settled in place. Spraying a light mist of water while compacting can also help. The smoother, flatter and more compact the excavation, the better the resulting top surface will be. This is actually the hardest part of the chore; take the time needed to make sure it's done correctly.



To create a leveling guide for the sand bed, first stake down the edging securely and then add screed guide rails against the edging. These can be 3/4" x 1" wooden strips or 1" metal or plastic pipe. For wide areas, position the guides about 2-1/2' apart.

BUILDING THE BASE

Once you're satisfied with the excavation, add 4 inches of crushed gravel and smooth it down evenly with a hard rake. A rented concrete "puller" can also be used for this chore. The best choice in gravel is often called "road base." It not only has the crushed stone, but fine dust from the crusher as well, and it compacts better than the cleaner gravel commonly used for concrete projects. The gravel should also be well compacted using a plate compactor.

Place the edging of your choice, temporarily bracing or

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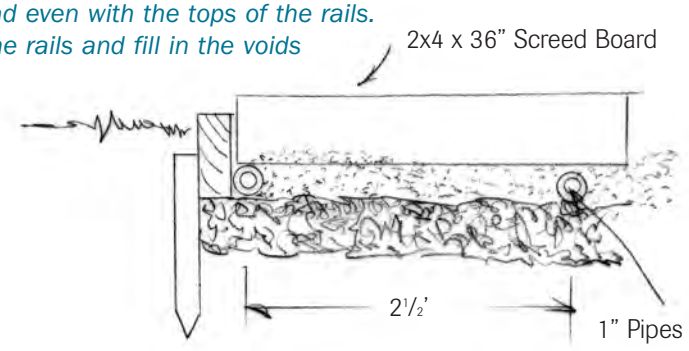
anchoring with stakes. Then experiment with the pattern you've chosen, again temporarily laying bricks around the perimeter of the area. As you will find out, complex patterns such as herringbone will require you to cut a fairly large number of bricks. Once you've determined the desired pattern will fit the area, remove the bricks and anchor a portion of the edging in place. For a square patio this means two sides, leaving the other two sides to be temporarily edged but not anchored until completion of the bricklaying. This allows for any variance in the layout, which will occur. For walks and smaller areas, anchor one side but leave the opposite side temporarily anchored.

For narrow areas such as a sidewalk, lay a piece of 1-inch pipe (plastic or metal plumbing) or 3/4-by-1-inch wood strips on either side next to the edging. This will be used to gauge the sand depth. For wider areas, place the sand gauge pieces 2-1/2 feet apart. Then pour or shovel the sand. Keep the sand moistened with a fine mist to help pack it down properly and prevent voids. Roughly rake the sand even with the tops of the gauge strips or pipes to an even depth of 1- to 1-1/2-inches. Then use the screed board, resting it on the screeding rails and using a side-

Moisten the sand and keep it wet, applying it between the guide rails. Then use a wooden screed to drag the sand smooth and even with the tops of the rails. Remove the rails and fill in the voids with sand.



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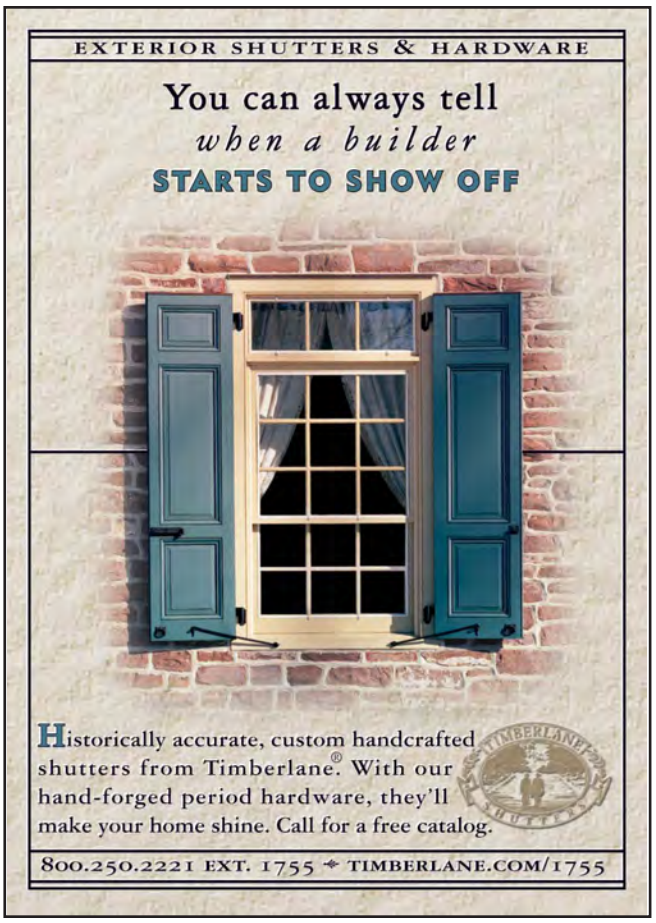
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ways and pulling motion to level the sand to a 1-inch depth, even with the screeding rails. Remove the rails and fill the voids with sand, using a trowel to pack down the sand. Note that on sidewalks you may desire to create a slight crown, because the sand will shift down in the middle. After striking off the sand, lightly mist the sand bed again, then do not walk or disturb it.

LAYING THE BRICK

Now comes the fun part, laying the brick. Depending on the size of the project, this may take only a few hours or a few days. Unless you have a rainstorm, you can easily stop at any time during the project construction. In any case, make sure the sand base is well moistened and solid. Start at one corner where you have permanently anchored the edging; or, if joining to a house foundation, curb or other permanent edge, start at that point. Lay one square or run of brick adjacent to the two borders to set your pattern. Don't tap or hammer the bricks in place, merely place them on the sand base. The bricks should fit fairly snugly with about 1/16- to 1/8-inch space between them. Recycled bricks are often more uneven than recently manufactured bricks. You may have to dig out or add a bit of sand to set them properly. Then continue repeating your pattern. Work from the brick side onto the sand. Don't walk or disturb the sand base. If the sand base becomes disturbed, relevel with a broom or trowel. Use a carpenter's level to make sure the surface is level as you work.

A string line across your working edge can help maintain a straight line. If your pattern wanders a bit, use a trowel or wide-

Starting at one permanently anchored edge corner, lay the bricks in the pattern chosen.

blade putty knife to shift the bricks to make small adjustments. Small gaps between the bricks will be filled with sand.

Once you have all the full bricks laid, anchor the final edges and then cut the bricks needed to fill in around the edges. Make sure the cut bricks are no smaller than 2 inches in width. Bricks can be cut fairly easily with a brick hammer and chisel. Place the brick on a smooth, flat and solid surface. Wearing safety glasses and leather gloves, position the brick chisel on one face and tap to score the face. Turn the brick over, position the chisel in place and rap it sharply. The brick should break on the scored line, but this does take some practice.

Check that all bricks are level and positioned correctly, then sweep dry sand over the surface and into the cracks. Start at one corner and do a quarter section at a time, sweeping in all directions to completely fill the joints. Lightly hose the surface to further settle the sand and wash

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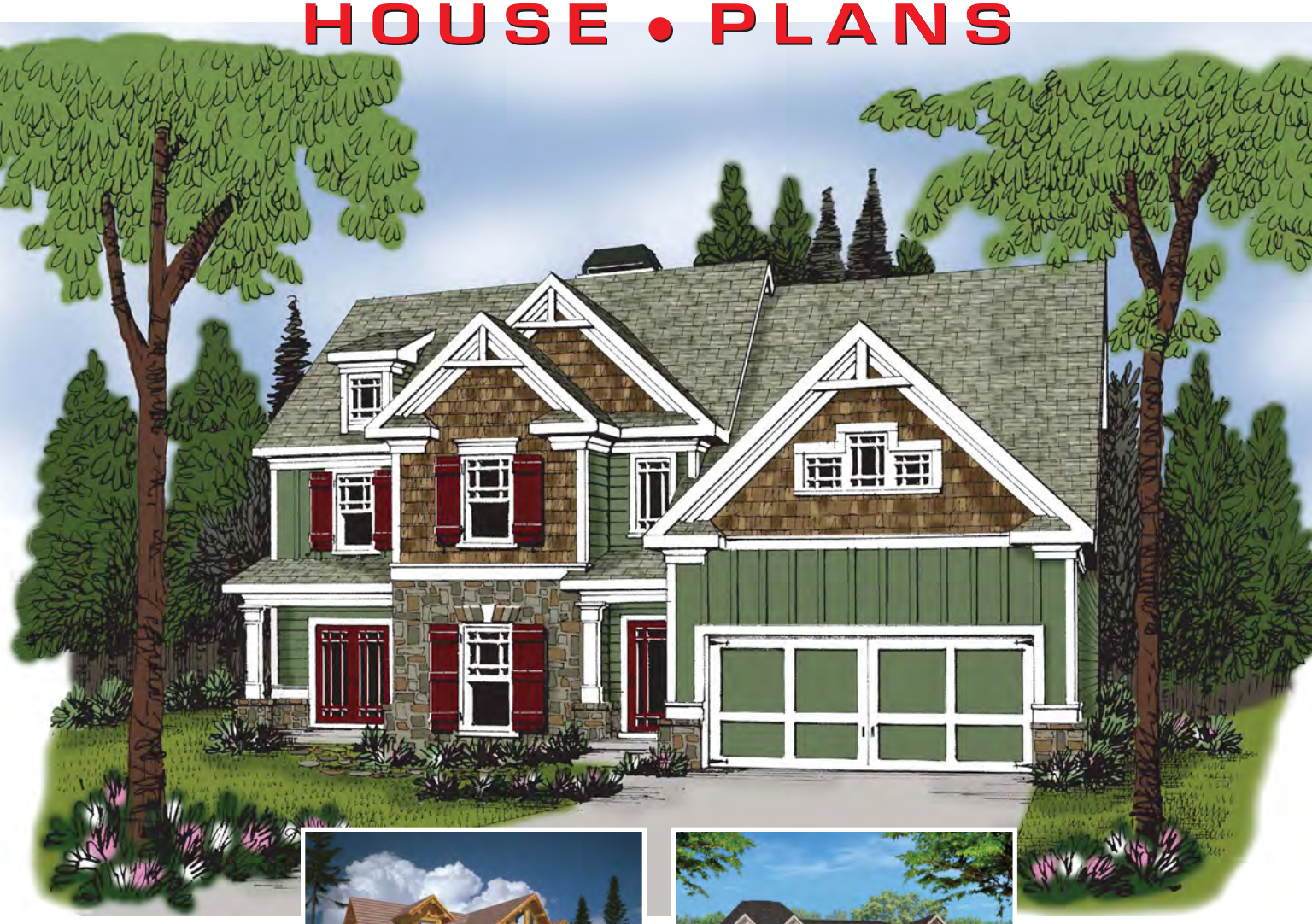

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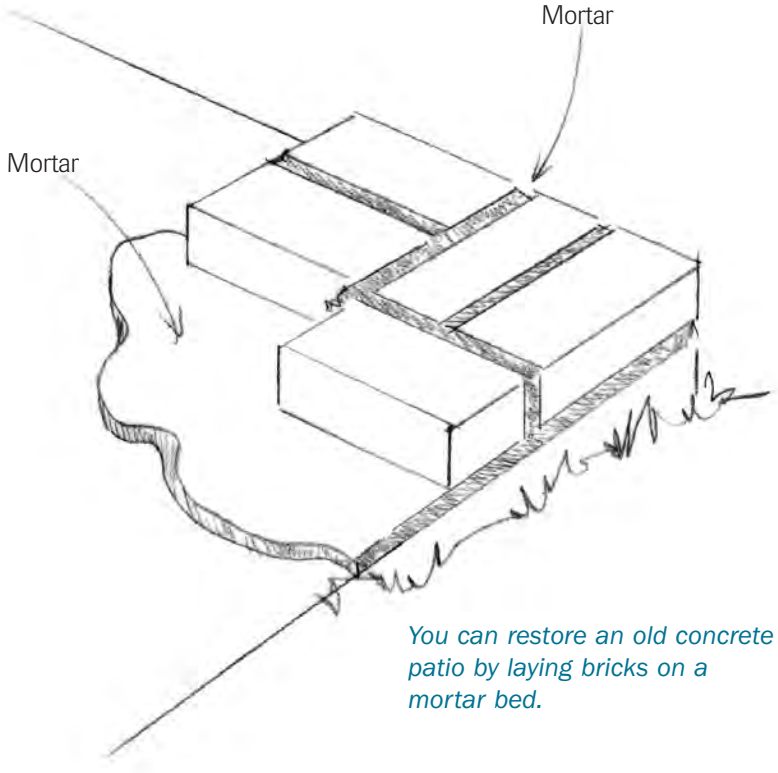
away excess. You may wish to use the compactor to further settle the bricks, but first add a layer of sand over the bricks to prevent damage to their surface from the compactor. The sand in the cracks will eventually settle and require additional sand.

The joints can be filled with mortar, but these joints will eventually crack as the sand and bricks settle. If you wish for a mortar-filled bed, apply a dry mix of one part cement to four parts sand. Apply this as a dry mix, packing it into the joints with a trowel. Then moisten the mortar with a fine mist spray from a garden hose. Do not use a high-pressure washer. Continue to dampen the surface over the course of several days, and to flush away excess mortar. The process will probably need to be repeated in a year or two.

Sweep dry sand into the cracks, and then moisten it to further settle it. After it settles, add more sand as needed.

One way of refurbishing an old concrete patio is to lay a brick pattern in a bed of mortar on the patio surface. Clean the old surface as much as possible, then prepare a standard mortar mix and spread a 1-inch thick coat. Lay the bricks in the mortar in the pattern chosen. Place mortar on the ends and one side, position in place and tap each brick firmly to avoid air pockets. Frost can cause the bricks to heave around air pockets. Leave about a 1/2-inch wide mortar joint between each brick. Use a level and long straight edge or 4-foot level to make sure the bricks are level with no low or high spots. Trowel the joints flush, or lightly tool them with a mason's jointer. EHT



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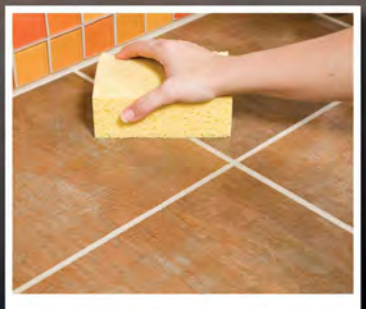

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STEP UP TO STAIR BUILDING

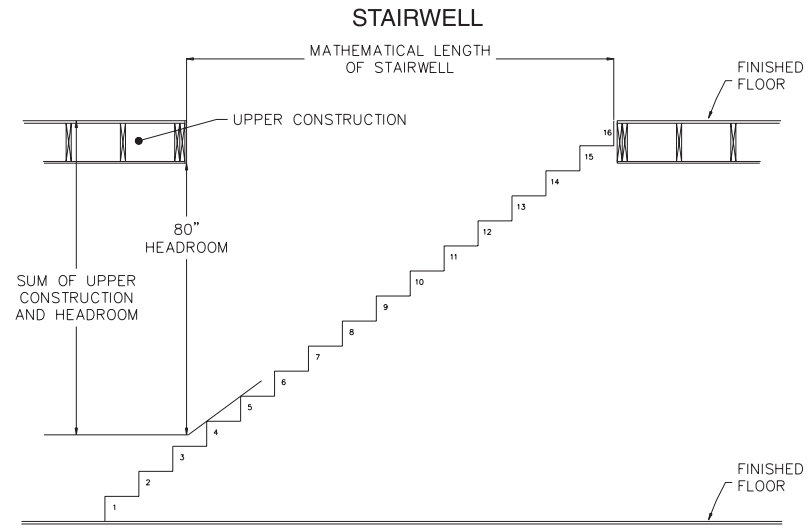
Back by popular demand: This tutorial on constructing site-built stairs originally appeared in *EHT* about five years ago, and we still get numerous requests for information on stair-building.

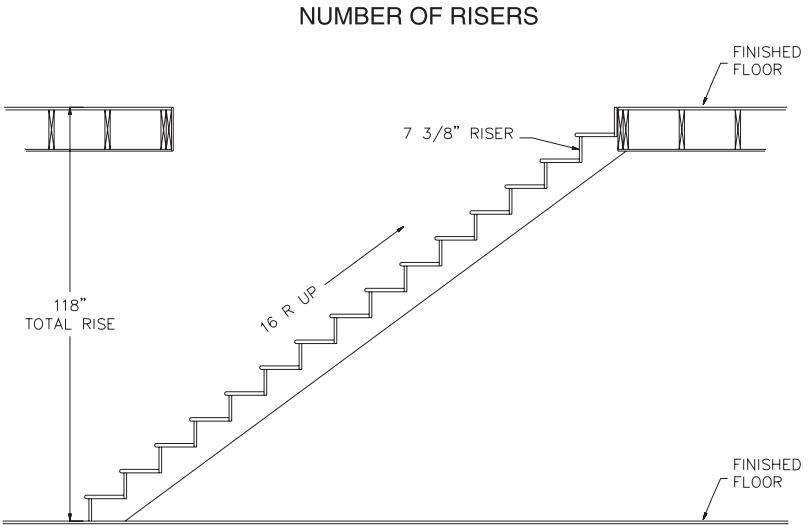
Here's some advice from a professional carpenter on how to complete the project.

When constructing a stair, functionality is the most important consideration. Extreme accuracy must be used for a safe design. Before beginning construction, you should consult not only the national building code requirements, but also the local building code requirements. Some municipalities have stricter codes than others, and checking first will eliminate the need to rebuild later.

After determining the correct code requirements for your stair, consider the stair's design aspects. Remember, the construction materials that you use will dictate the outcome of your finished product, and quality materials will produce a quality job. Do not mistakenly think that because the material will be covered with carpet and no one will see it, the quality of construction materials doesn't matter; it does. When you use a lower grade of material that contains knots and voids, the stair may encounter cracking at a later date. Most lumberyards carry

By Doug Adams





stock used specifically for the construction of stairs.

LAYOUTS AND CALCULATIONS

After checking the codes, grab a pencil and commit your plans to paper, sketching a rough blueprint of your staircase. For the purpose of this example, the project will be a straight stair. In this case the building code states that you may have a maximum riser height of 7-3/4 inches and tread run of no less than 10 inches.

First, determine the size of your stairwell, making sure to allow for the proper headroom to accommodate the stairs. Headroom is very important; you need to be able to ascend and descend the stair safely. Many a stair has been torn out due to incorrect calculation of this item before the stair is built and installed. There is nothing worse than having some common stair-building sense knocked into you by bumping your head. For this example the nosing will be a standard 1-1/4 inch, the tread run will be 10 inches each, and the headroom will be 6 feet, 8 inches.

Assuming the distance from one finished floor to the other (total rise) measures 118 inches, find out the number of risers needed by dividing the total finish rise by 7.5. The resulting number equals the number of risers. Then divide that number into the total finish rise.

Example: Total rise 118”/ 7.5 = 15.73” — round up the total number of risers to 16

Total rise 118”/16 risers = 7-3/8” each rise

Knowing the number of risers tells you the number of treads—15 (the sixteenth riser will be positioned approaching the upper floor with no tread on top). The run of the stair will then be 15 treads at 10 inches per tread, or 150 inches of total run. To determine the actual total length of the stair, you must add the nosing of the bottom step and the thickness of the top riser.

Example: Total tread run 150” + 1-1/4” nosing + 3/4” top riser = 152” total stair length

Next, calculate the length of the stairwell, or the width of the upper floor’s vertical shaft in which the stairs are located. This is a two-step calculation.

First, account for the required headroom and the upper-floor construction, including floor-joist height, floor thickness and drywall thickness. For the purpose of our example we will calculate the upper-floor construction to be a total thickness of 12-1/2 inches. This figure (12-1/2 inches) added to the desired headroom height of 80 inches will total 92-1/2 inches. Take this dimension and divide it by the riser height.

Example: 92-1/2” / 7-3/8” = 12.542

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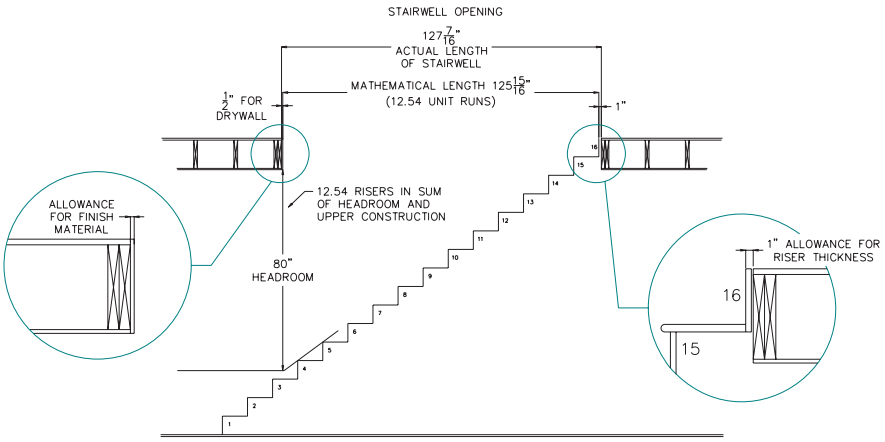
The answer you get (12.542) is the number of treads needed in the clear opening to make headroom. This would mean that you now have 2.45 treads that are located under the header. By multiplying 12.542 (number of treads in clear opening) by 10 inches (tread depth dimension) and adding 1-1/4 inch for the nosing and 3/4 inch for the top riser, you will achieve the stairwell length needed for the proper headroom. The result for our example is 127-7/16 inches for stairwell length. Most stairs that are located between two walls have a finished width of 36 inches. To accommodate this finished width you will need to make your rough opening 37 inches.

ALLOWANCES FOR STAIRWELL



The end result of our layout procedure is: 10” run, 7-3/8” rise, 127-7/16” stair well length, 37” stair well width, 36” stair finish width

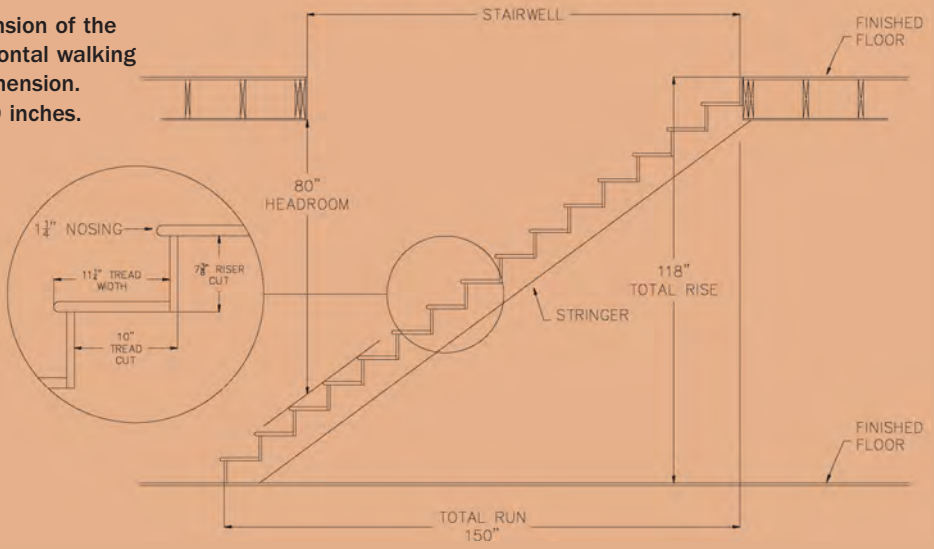
CUTTING THE STAIR

Now that we have directions on paper as to how to build our stair, it is time to begin cutting. Carpenters always measure twice

STAIR BUILDING TERMINOLOGY

- **Treads: Horizontal walking surface of the stair.**
- **Riser: Vertical surface between two treads.**
- **Stringer: Support for the treads and risers; usually cut to have the treads sit on the horizontal plane and the risers nailed to a vertical cut.**
- **Skirt board: Piece of lumber placed next to a stringer and used to provide trim along a wall.**
- **Headroom: Space from the leading edge of a tread to the header directly above. Six feet, 8 inches is a minimum guideline to follow.**
- **Nosing: The overhanging lip of the tread. Standard nosing is 1-1/4 inches.**
- **Tread depth: The cut dimension of the stringer; depth of the horizontal walking surface less the nosing dimension. Standard tread depth is 10 inches.**
- **Riser height: The vertical dimension between two treads; this dimension must be equal throughout the total flight. Standard riser height is 7-5/8 inches and should not exceed 7-3/4 inches.**
- **Total rise: The dimension from one finished floor to the finished floor above.**
- **Total run: The length of all of the treads combined.**

STAIR TERMINOLOGY



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and cut once, a good rule to follow when cutting stairs. Stair building can be expensive; you only want to purchase the materials once, so purchase and cut wisely.

When you start the project, make sure your work area is clean and well lighted. Working in comfortable surroundings makes a difficult task a little easier.

Lay out the stringers to begin the actual stair project. Do this by setting the rise and run of the stair on the framing square. The framing square clamps should be adjusted to 7-3/8 inches by 10 inches. Next, mark off the number of treads and risers that are needed for this stair. Always start with the first riser and end with the top riser, and draw in the second floor line. At this point it is helpful to count the number of risers so there isn't a layout error. Repeat this procedure for all three stair stringers.

After you have marked the treads and risers, it is time for the final adjustments to the stair stringer. As with any well-planned work of art, tweaking the design may be necessary. In order for all of the risers to

Use a square to mark off the rise and run of the treads.

Start the cutouts with a powered circ saw; finish with a handsaw.

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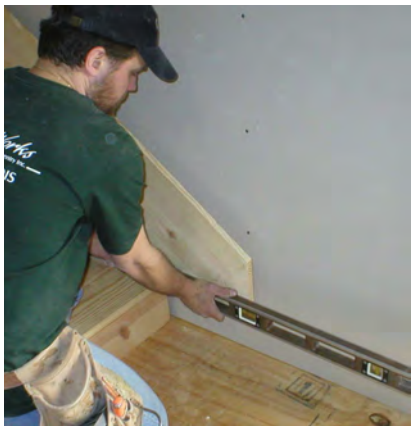
be in code-compliance, adjusting the top and bottom risers may be necessary. In our example, when a 1-inch-thick tread will be added to the bottom tread cut, our bottom riser will be 1 inch too high. The opposite is true at the top. When we add the top tread, its thickness deducts 1 inch from the exposed riser height. To correct this situation we will deduct 1 inch from the bottom riser cut at the floor-level portion of the stringer.

After you have successfully laid out the stringers, cut off the triangular portions. A power circular saw is the best tool for this task, but be careful not to cut beyond your marked layout lines, which will weaken your stringers. The final cutting of the triangles can be done with a handsaw or jigsaw. After all three stringers are cut out, place them together to make sure they all match. Three perfect matches are what you want to achieve.

Secure the treads and risers with glue and nails.

A skirtboard can be installed along the wall to serve as trim.



Anything less than three perfect stringers and you may want to consider going back to the drawing board.

With three good-looking stringers on your bench, you can now take the left and right stringer and position them on top of the 1-by-12-inch skirt boards. On each skirt board, trace the cut where the stringer meets the floor and the top riser. Cut these lines out and also make a plumb cut on the bottom of this board at the height of the baseboard. Attach the skirt boards to the two stringers. These two stringers are now finished and can be nailed on top of the drywall. If no drywall is in place, fill

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out the stringers to the thickness of the drywall. Always nail or screw to the studs. The center stringer is now ready to be mounted to the top header and attached to the blocking at the floor.

Now that your stringers are in place, it is time to double-check all of your cuts. Check the tread cuts for level and plumb. Check your measurements in every direction, left to right and front to back. Check the top and bottom riser. Does it allow for the finish tread height? The top riser should offer a tread thickness of more than 7-3/8 inches and the bottom riser should be tread thickness less.

After you have double-checked all of your cuts and are satisfied that you're on the right path, it is time to rip the risers to the correct heights and nail them into place. Don't forget to glue and nail them for long-lasting durability. Your treads should be 11-1/4 inches so they will not need to be ripped, just cut them to length, glue and nail into place.

Nail the treads and risers to the stringers. Install by nailing through the back of the risers and into the treads, always using cement-coated fasteners.

Your stair is now complete except for the wall or handrail. Because our example stair is located between two walls, we will need to put a wall-mounted handrail in place to meet code compliance. Mount the handrail at 34 inches above the leading edge of the tread. It should be 198 inches in length and contain a wall rail bracket screwed into a stud or backing, every 4 feet. In the case of an open rail section

TIPS & TRICKS

- To create a softer edge where the carpet breaks over the tread edge, rout the edge with a 1/2-inch round-over bit prior to installing the treads into the stringers.
- If your material is splitting, predrill your holes. This can also help prevent squeaking in the future.
- Glue blocks can be placed at the underside between the tread and riser intersection.
- Another very important, but sometimes overlooked, item is to seal the underside of your stair. This will eliminate the stair from squeaking and warping.

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to one side of the stair, it is easiest to mount the balusters on an angle cap.

You are now ready for inspection!

Stair building is an art. Do not expect to be able to learn it all in just one article. Many experienced carpenters have difficulties building stairs. So if you've pulled your hair out trying to achieve a quality stair project, you're in good company. Be patient and with a little practice, you'll be making your way up in the world on the steps you've just built. **EHT**

Editor's Note: *Douglas M. Adams is owner and founder of Adams Stair Works and Carpentry, Inc., located in Grayslake, Illinois. Adams Stair Works is a custom manufacturer and installs mill-made stairs nationwide. For more information, visit www.adamsstair.com or call (847) 223-1177.*

Shown is the completed staircase.

MATERIAL LIST

Stringers	(3) 2"x12"x18'	Tread stock	(15) 5/4"x12"x36"
Skirt board	(2) 1"x12"x18'	Riser stock	(16) 1"x8"x36"

Miscellaneous nails, fasteners and white glue

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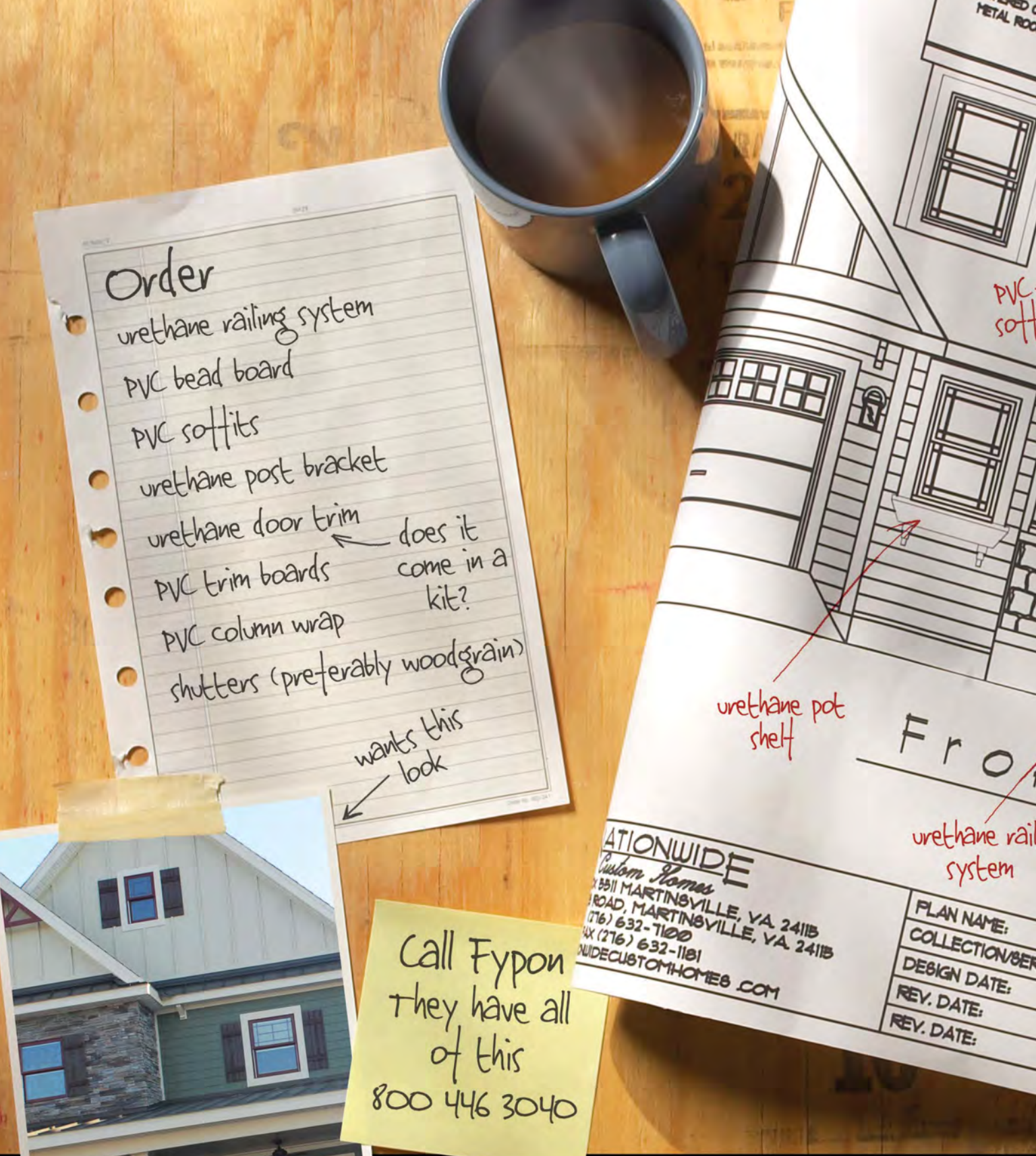

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CLAS

By Kathy Ziprik

PVC column wraps and a matching balustrade system create a stylish porch with great curb appeal.

CREATE A CLASSIC FRONT PORCH >>>

CREATE A CLASSIC FRONT PORCH

Most homeowners dream of relaxing on their front porch and watching the world go by. Tina and Brett Mealer had the same dream, so they decided to transform their ho-hum, bare-basics porch into a showpiece.

"We had some ugly wooden posts holding up the porch overhang, and the kids kept jumping off the porch area," says Tina Mealer, a resident of Wauseon, Ohio. "We wanted to create more of an enclosure that we could all share together plus add 'curb appeal' to our home."

The Mealers got their dream porch when local contractor Steve Roth installed PVC Column Wraps from Fypon to surround the wooden posts and added balustrade systems to enclose the entire porch area. Made of synthetic materials, the low-maintenance porch pieces resist warping, all forms of insects, decay and rot.

"The column wraps went up easily," says Roth. "Each one comes in a kit and includes a semi-assembled, two-piece wrap with the cap, base, installation cleats and caulk adhesive. The external cleats make installation a breeze by making them easy to reach and providing flexibility in positioning. I had each column wrap up in under 15 minutes."

WORKING WITH PVC COLUMN WRAPS

Fypon PVC Column Wraps are non-structural and must be installed around a previously installed structural post. The post provides the load-bearing component of the column, and the load-bearing capacity is determined by the strength of the post. Note: Do not use untreated lumber for the structural posts.

The bottom of the post should be mounted to a wooden deck or concrete porch floor using a code-approved method and post anchor. The top of the post should be mounted to the beam using an approved post-to-beam mounting bracket.

Cellular PVC becomes more brittle in colder temperatures, making it more susceptible to damage, so the material should be warmed to 50-55 degrees before installing. To do so, just move the pieces into a heated space and allow time for the material to warm up. If you are unable to warm the columns before installation, you should pre-drill the nail or screw holes to avoid fractures.

Cellular PVC can be cut with conventional carpentry tools. Small pneumatic finish nailers and staplers can be used to fasten the column wrap. However, large framing nailers are not suitable because the drivers can fracture the PVC material. Coarse thread, galvanized or stainless steel drywall screws are suitable fasteners. Be sure to drill pilot

WHY PVC?

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When compared to wood, PVC has a closed cell nature, so water cannot penetrate the product. Unlike wood, PVC trim will not swell, rot or shed a painted surface due to water infiltration. Additionally, PVC resists all forms of insect infestations, woodpeckers, mold and mildew. Another benefit is that PVC has 100 percent product usage. There are no knots, voids or splits (which occur routinely in wood) that can lead to waste and unsightly appearance.

holes for screws longer than 1-5/8 inch.

INSTALLING THE COLUMN WRAP KITS

The Fypon column wraps are sold in complete kits. Each kit contains two L-shaped PVC column halves, two L-shaped cap halves, two L-shaped base halves, four L-shaped external installation cleats, and one tube of Siroflex Duo-Sil Adhesive Caulk.

Begin the installation by dry-fitting the column wrap in position over the structural support post. Make sure the column base does not overhang the deck or porch. Note: Always check with local safety codes for any regional requirements.

Measure the support post to determine the length of the column wrap. Use a square to mark cut lines along the wrap half. Cut each wrap half to length with a circular saw or jigsaw.

Next, use the screws provided with the kit to attach the L-shaped external installation cleat to the outside bottom of the column wrap. The cleat designates the bottom of the column. Then dry-fit the two halves together over the support post.

Fypon provides arrows inside the column wrap to ensure the miters match up correctly.

For this particular porch project, the Mealers wanted a matching balustrade railing system. If installing railing, then pressure-treated blocking must be installed at the height where the railing will be attached to provide solid support for the railing and fasteners. The thickness of the blocking must span the entire space between the post and inside surface of the column wrap. Additionally, the mounting

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Far left: *The column wraps are mounted to the floor with L-shaped cleats.*

Left: *Use a chalk line to guide the installation when installing multiple wraps in a row.*

Below: *Install the wraps one half at a time using code-approved exterior fasteners and the supplied adhesive.*

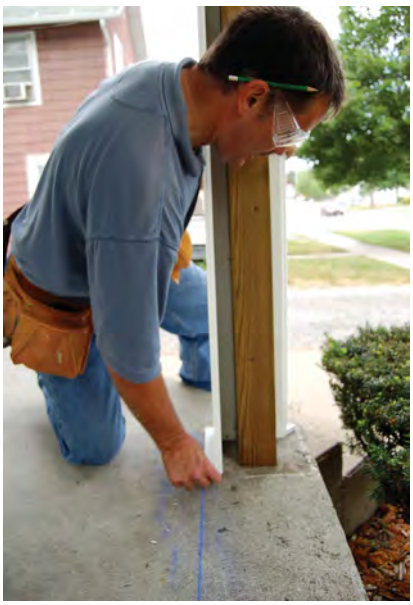
screws must be long enough to go through the blocking into the support post. However, if no balustrade system will be installed, you can skip the blocking.

To install the wraps, first apply the provided caulk to the two mitered edges of the column wrap halves. With the L-shaped cleats at the bottom, position the two column halves around the support post. Make sure the cleats are flush at the base. Fasten the shaft seams together every 6 to 8 inches using 1-1/4-inch rust-resistant fasteners. Wipe off the excess caulk before it dries.

Next, fasten the base of the column to the floor by driving flat-headed fasteners through the cleats. The base assembly of the column wrap will set directly on top of these fasteners, so they need to be flush. The cap and base will conceal the fasteners.

Plumb both sides of the column shaft. Use a pencil to mark the position of the shaft when plumb. Then secure the two remaining installation cleats to the ceiling, while the shaft is plumb. The cleats will surround the column, locking it into position. Again, the fasteners should be flush so the cap can butt up tightly against them.

Finish the installation by attaching the cap and base to the column, positioning them

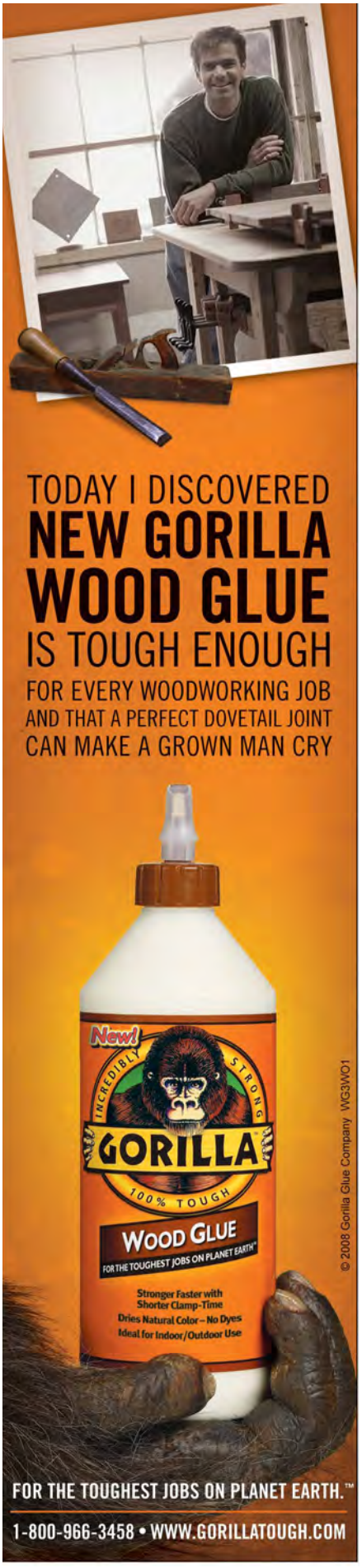


directly against the cleats. Apply the Siroflex brand Sealant and Adhesive to the mitered edges at the corners. Also caulk the small gap between the column shaft and the cap and base. Wipe away any excess caulk and use lightweight spackle to fill the fastener holes. Lightly sand or scuff the surface to remove excess spackle. Then clean the surface with light detergent and water, denatured alcohol or window cleaner. Remove any soap residue with clean water.

For best performance, paint Cellular PVC using light colors with a Light Reflective Value of 55 percent or higher. Dark colors will have an impact on the expansion and contraction of the material.

WRAPPING IT UP

After installing the three PVC Column Wraps, Roth moved on to the structural balustrade system. The Mealers selected an Ashley design that connected to the column wraps and enclosed the entire front porch.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Fypon's balustrade systems are also available in installation kits, which contain all the hardware and fasteners necessary to complete the project. The systems are available in more than 40 different sizes and styles. For in-depth instructions on how to install the balustrade systems, visit the Fypon website at www.fypon.com. EHT

When installing an accompanying balustrade system, blocking must be added inside the column wraps to provide a solid mounting location for the fasteners.

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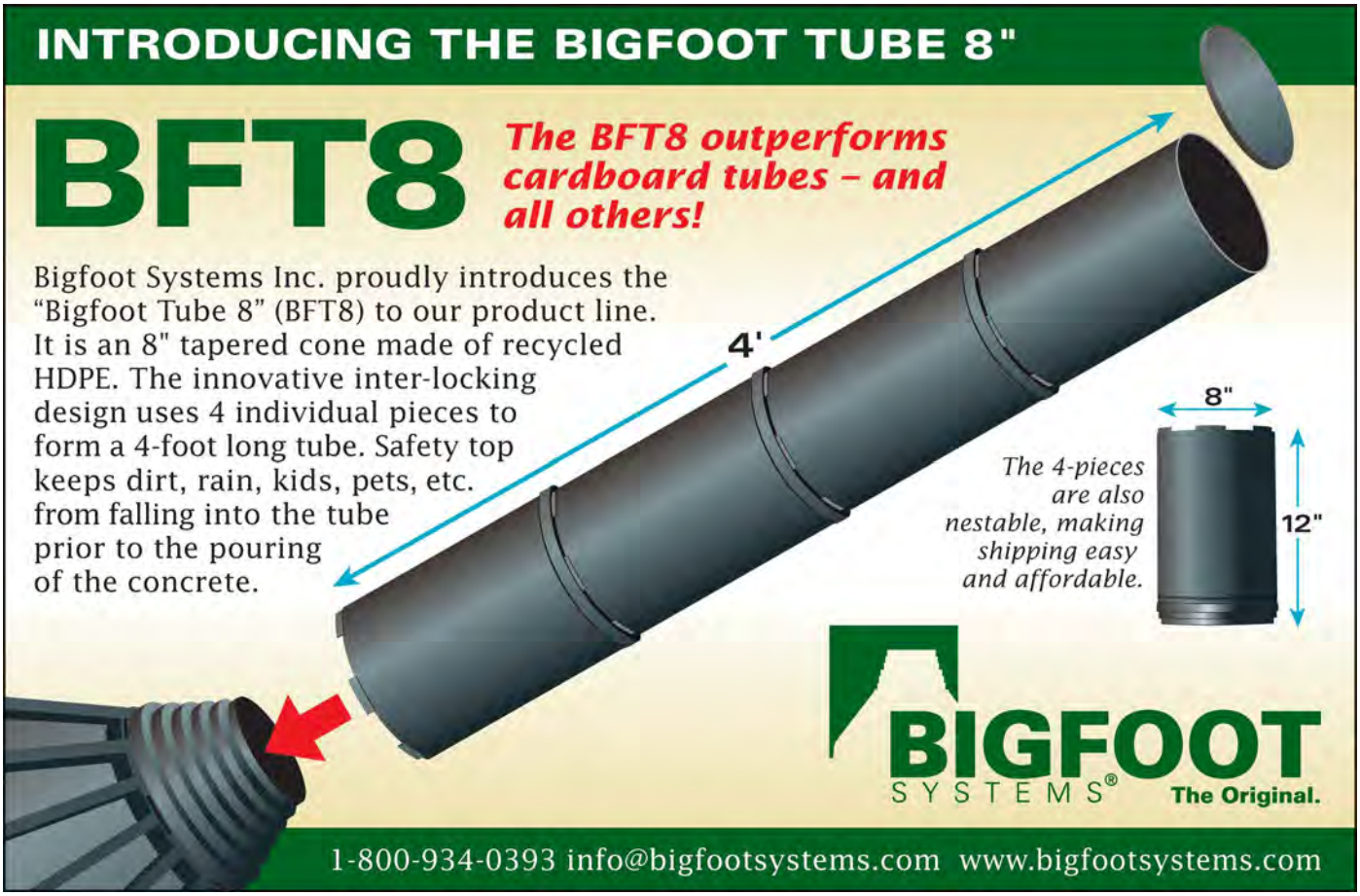

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INSTALL A SOLID-SURFACE SHOWER PAN

A CLOSE LOOK AT MATERIAL OPTIONS AND DIY INSTALLATION

A well-constructed shower pan ensures the integrity of the shower envelope and prevents water from damaging the floor and walls of the bathroom. The pans are often constructed of mortar and tile, but are also available as a single-piece composite. Installing a composite pan is fast and easy when compared to mortar and tile. However, before discussing the simple steps to install a composite shower pan, I feel some clarification and definitions are necessary because not all shower pans are alike.

WHAT'S IN A NAME?

A roof is a roof, although there are many different roofing systems and roofing materials. Not true with "shower pans." They are often interchangeably called a shower pan, shower pan liner, shower pan membrane liner, waterproof barrier, shower base, shower tray or shower receptor. Yet, each has a different meaning, depending on context, and each are available in a variety of materials.

Bob Vila defines a Shower Pan as "the base, containing a water drain, of the shower enclosure." And a Shower Receptor is defined as "a one-piece base (floor) unit used as a shower, for example, to catch water and direct it to a center drain."

For the sake of clarity, I offer the following definitions.

SHOWER PAN & SHOWER BASE

A shower pan is synonymous with a shower base, referring to the finished area that is capable of retaining and directing water to the drain. Plus, it doesn't require tiling once installed. The shower pan or base has a drain hole, sloped floor to properly direct water to the drain hole, sidewalls, and a threshold (entrance to the shower that forms a curb to keep water from running out onto the bathroom floor).

SHOWER PAN LINER, MEMBRANE LINER & WATERPROOF BARRIER

These three terms are interchangeable and refer to a barrier, usually a plastic sheet or membrane, which is intended to trap water that penetrates the shower floor tile, grout and mortar beneath the tile and force the water to flow to the drain. Installation involves folding it at the corners and as long as it doesn't leak, it prevents

By Milton Lemberg

water from reaching the sub-floor and surrounding wall enclosure. The liner is a component within a constructed shower pan.

SHOWER TRAY & SHOWER RECEPTOR

A shower tray is synonymous with a shower receptor. Both are used in place of a liner. They serve the same function as the liner, but are pre-formed to eliminate some of the installation steps necessary when using a liner.

Shower pan liners, shower trays, and shower receptors are all used in conjunction with the construction of a shower that has a tiled floor as well as a tiled wall enclosure.

COMPOSITE SHOWER PANS

As an alternative to tile, shower pans are available as complete, ready-to-install units. They eliminate the need to create a mud-sloped floor and a shower tray, and there's no need to tile the shower floor. Composite shower pans are made from a number of different materials and constructed differently. All are generically classed as composite materials, so I wanted to touch on the most common types.

Composite shower pans fall into several material groups; cultured marble, fiberglass, acrylic and solid surface. Generally, all are made by fabrication of flat sheets, thermal-formed from a single piece of material, or molded or cast to form a one-piece unit. The one-piece construction eliminates seams, which in turn eliminates potential leaks. Each material has its pluses and minuses. Because beauty is in the eye of the beholder, I will not comment on appearance. All composite shower pans install on a flat, level floor and do not require the creation of a sloped mud base. Also, the cast or molded pans generally do not require the use of a plastic membrane.

Cultured Marble—Cultured marble and dressier versions, like cultured onyx and granite, tend to be the least costly. Cultured marble is made by spraying a 'gel-coat' onto a mold. This coating is about 1/64 inch or less in thickness. The gel-coat is covered with pigmentation and then backed with calcium carbonate. The calcium carbonate gives the finished part its strength, although in the casting process it is infused with air pockets to lower its density and weight.

The cultured marble floor is cast separately from the sidewalls. Thus, the incorporation of a shower pan liner is essential to ensure a watertight, leak-free installation. Although widely used, the down side of cultured marble is that aside from the gel-coat layer, the calcium carbonate

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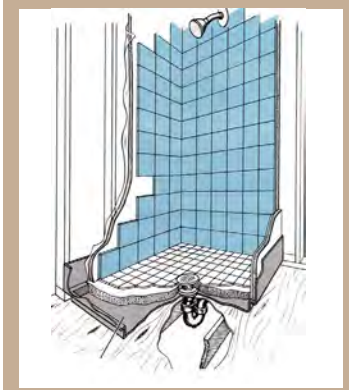

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The OneLiner from Dix Systems is a structured liner, or shower tray, for use in ceramic tiled showers that will stop any leakage from the shower floor and help prevent mildew problems. The OneLiner is a one-piece pan constructed from polyethylene without any folds or seams. It is quick and easy to install, and very difficult to puncture or tear. The OneLiner is also pre-sloped to the drain to allow for total drainage.

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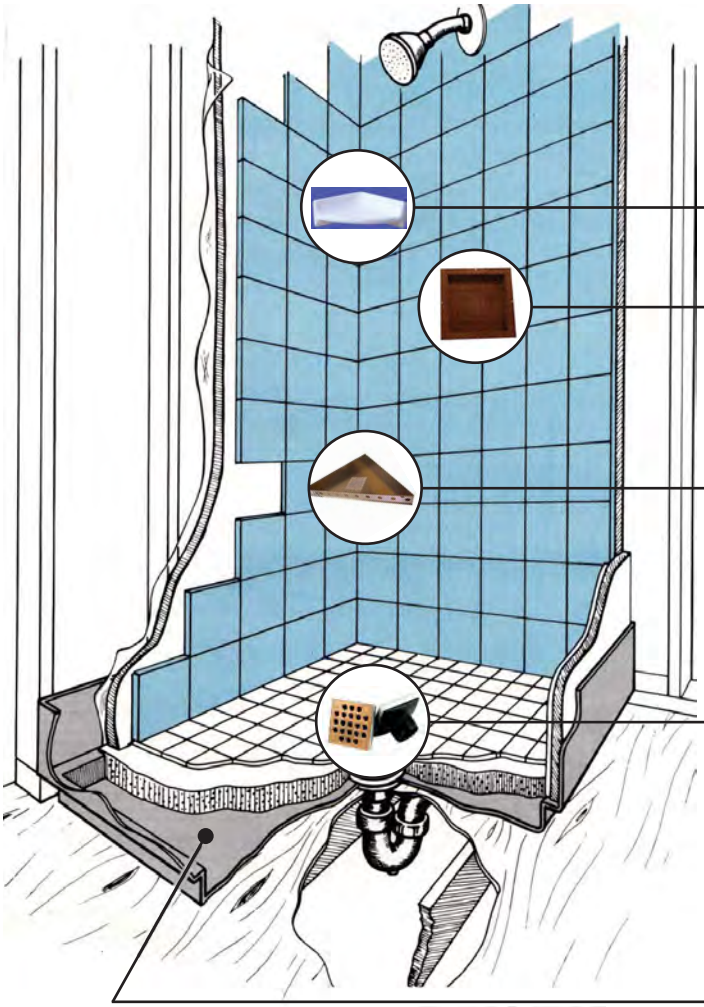

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  - *Very difficult to be punctured or torn*
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  - *Helps to eliminate mildew problems due to it's total drainage design.*

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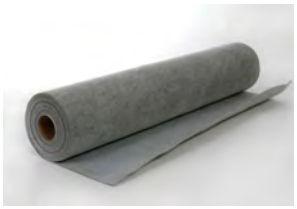

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is highly porous. Any crack or scratch through the gel-coat will allow water penetration. Other gel-coat characteristics include; yellowing, even without UV exposure; clouding from hot tap water; staining; crazing (fine hairline cracks); and it is not reparable when cracked or chipped.

Fiberglass—Another widely used material, fiberglass is strong, lightweight and inexpensive. Many fiberglass manufacturers make one-piece shower pans and enclosures, as well as one-piece combination tub-and-shower surrounds. Similar to cultured marble, fiberglass is made with a gel-coat, then backed with pigment and chopped strands of fiberglass in a resin mixture. Generally, the finished product is about 1/8 to 1/4 inch in thickness. The underside of the shower pan floor incorporates webbing to provide support to the floor. Because the floor is not solid, the unsupported space between the webbing can flex. Over time, this flexing can cause material fatigue and cracking. Once a crack develops, the pan has failed.

Acrylic Sheet—Acrylic sheets are used to vacuum-form shower pans, bathtubs, spas and many other items. The vacuum forming process begins with a 1/4-inch sheet of pigmented acrylic that is heated to a temperature that makes the acrylic ductile. The sheet is placed on a mold and stretched over the form to create the finished shape. The heating and stretching of the sheet causes a reduction in wall thickness. Although, the reduction is directly proportional to the amount of stretching that occurs. With shower pans, there is far less material reduction than with creating a tub or spa.

Like fiberglass pans, acrylic pans need support elements under the pan floor. A commonly used support element is polyurethane foam. The foam fills the void and eliminates the flexing of the pan floor. Acrylic sheet material is susceptible to crazing, minute surface cracking, and cracking when cleaned with many common cleaning chemicals.

Solid Surface—Acrylic solid-surface materials have very different physical and chemical properties than acrylic sheets. The solid-surface material and the acrylic resin receives additional physical

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and chemical characteristics from the addition of alumina-tri-hydrate, or ATH. The ATH causes cleaners that adversely affect acrylic to have no affect on solid-surface.

Solid-surface shower pans are the top-of-the-line in physical and chemical characteristics as well as performance. Solid-surface pans are non-porous, will not support the growth of mold, mildew or bacteria, are available in a large variety of colors and styles (some like natural granite). Solid-surface pans are also 100 percent reparable should chipping, scratching or even cracking occur. And health departments throughout the country have approved solid-surface materials for use in hospitals and food-preparation areas for its resistance to bacterial growth, ease of cleaning and

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The Ridgid Faucet and Sink Installer is a multipurpose under-sink plumbing tool used to fasten and remove plastic basin nuts, supply line nuts, along with 7/8-inch and 1-inch hex nuts. The tool also features an aluminum insert for turning angle stop handles, and another aluminum insert for holding strainer baskets in place. The tool's extra long construction makes it ideal for hard to reach applications.

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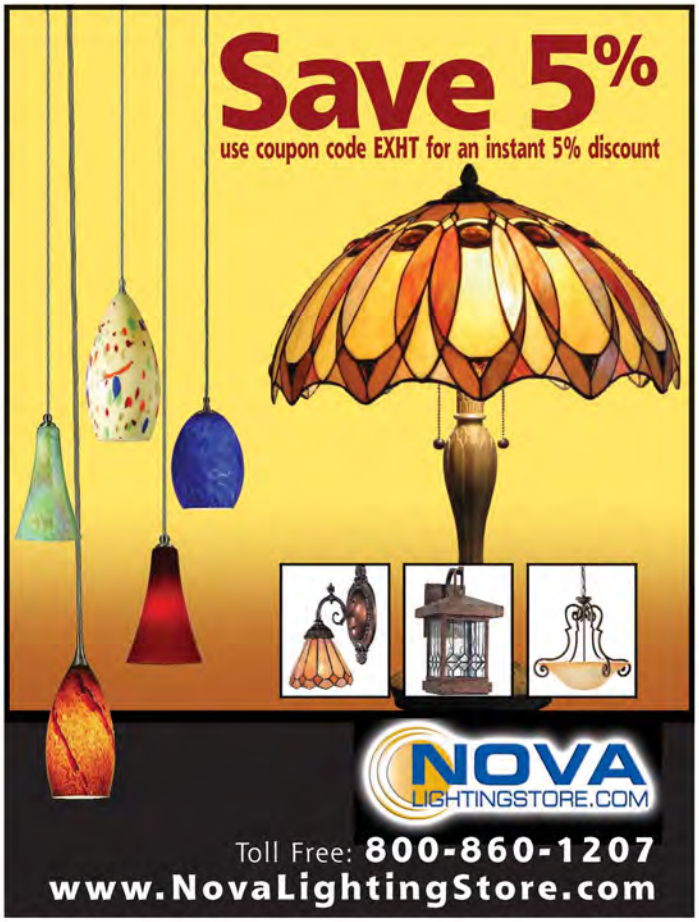

INSTALL A SOLID-SURFACE SHOWER PAN

maintenance, and resistance to staining and contamination.

The Royal Stone brand of solid-surface shower pan shown in this article is a cast one-piece product, which will illustrate the simplicity of installing a composite shower pan. By casting the pan as a one-piece unit, there are no stresses introduced in the pan. The large radius transition between the floor and its sidewalls is another advantage. Plus, the flange (also called a weep edge) is 1-1/2 inch tall. This added height is designed to minimize, if not eliminate, any water being drawn up behind the wall surround panels, which could cause water damage to the shower substructure.

EASY INSTALLATION

As already stated, composite pans install on a flat sub-floor. The following installation information may not apply to all types of composite shower pans. The following information directly applies to Royal Stone's standard and custom shower pans. The same steps should also apply to other types of composite pans and other materials; however, follow the manufacturer's instructions.

SUBFLOOR PREPARATION

Using the template provided with the shower pan, place the template on the floor and verify that the drain is in the correct location. If the drain is not properly located, relocate the drain. Note: Relocating the drain is usually far less expensive than having a custom pan cast to accommodate your existing drain location.

The hole in the subfloor needs to be larger than the drain pipe. A 6-inch diameter hole or one roughly the size of a coffee can is recommended. This larger opening allows room for the drain assembly that extends below the bottom of the pan. Most drain pipes are 2-inch PVC. The PVC pipe allows for some flexing within the 6-inch opening in the subfloor. This flexing is desired and makes the pan installation easier. The PVC pipe should extend above the finished sub-floor by a minimum of 1/2 inch.

The subfloor can be made of wood, plywood or concrete. It must be level and free from debris. To ensure a level floor, check the floor with a long level. The longer the level, the more accurate the reading. Check front to back, at the left and right sides, and at the center. Do the same from side to side. Finally, check the diagonals. At a minimum, eight readings should be taken.

Depending on the results of the level measurements, some additional prep may be necessary.

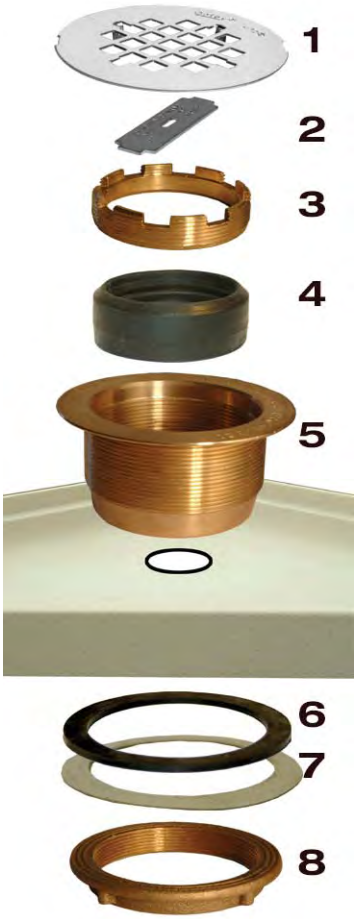

Fig. 1

If the subfloor is relatively flat, shims may be used to make the shower pan level. If the floor is uneven and out of level, pouring self-leveling thinset material may be necessary. Once the subfloor is level and the opening for the

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drain is correct, the setting of the shower pan is next.

ATTACH THE DRAIN ASSEMBLY

A standard two-part Brass Drain Assembly is recommended, as shown in Fig. 1 (page 68). This assembly should be readily available at any plumbing supply store or home-improvement store. Royal Stone also sells this drain assembly. Disassemble the drain assembly. Keep the components in order to make reassembly faster and easier.

Place the pan on sawhorses or any raised platform that allows access to the top and bottom of the pan. Spray the drain opening with rubbing alcohol. With a clean rag, wipe the surface and interior edge of the pre-cut drain opening, to remove any dust or other contaminants from the pan's drain area. Around the drain opening apply a generous bead of 100-percent silicone.

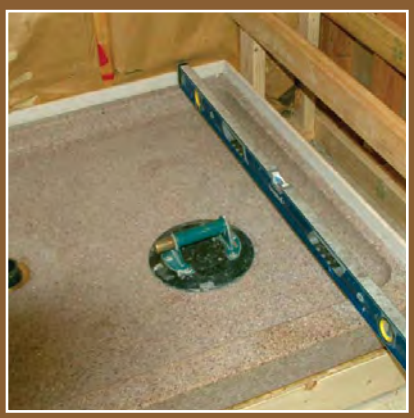
Next, insert the Drain Body (part No. 5, Fig. 1) into the drain hole and press firmly into place.

REMOVE THE EXCESS SILICONE

Remove the excess silicone from the drain body. Spray an alcohol mist over the drain area and the silicone. With a Dap-Cap, scoop away the excess silicone. This step may have to be repeated several times to completely remove the silicone. Follow up with a spray of alcohol and wipe any remaining film with a soft cloth.

MOUNT THE DRAIN LOCKING RING

Attach the Drain Strainer (part No.1) to ensure that the Drain Body is centered within the drain hole. From the bottom side of the shower pan, attach Parts No. 6, 7 and 8 to Part No. 5. Tighten the



Locking Ring (part No. 8) until snug. Note: Do not over-tighten. Over-tightening may crack the shower pan.

Then remove the Drain Strainer and set aside until later.

DRY-FIT THE SHOWER PAN

Lower the shower pan into place. Make sure that about 1/8 inch of space exists between the shower pan flange and the studs. With the level, confirm that the pan is sitting flat on the floor. If additional shimming is required, lift the pan and place shimming material where required. Lower the pan into place and check for level. A level pan is absolutely essential to proper drainage.

Once the pan is leveled and properly positioned, draw a pencil line onto the sub-floor at the front of the threshold.

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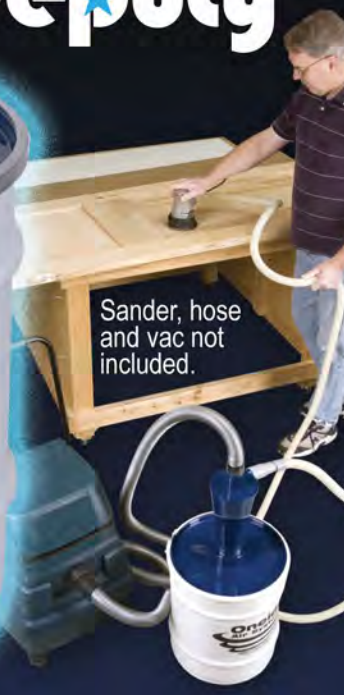

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TRIMMING THE PVC

The top of the PVC drain pipe must not extend above the Drain Body. The PVC should be trimmed about 1/4 inch lower than the top of the drain body. To do so, first lift the shower pan onto its back edge and lean it against the wall. Handle it carefully to prevent damage to the shower pan's flange. Then trim the PVC as required.

APPLY SILICONE AND SET THE PAN

Apply 100-percent silicone caulking to the underside of the shower pan webbing. Also, apply a thick silicone ring around the drain opening in the subfloor and along the line where the threshold is marked. Then, silicone all shims into position as required.

Lower shower pan into place. Once again, check the pan for level. Press down as necessary to re-level the shower pan. Remove any excess silicone that has oozed out from under the threshold.

CONNECT THE DRAIN PIPE TO THE DRAIN ASSEMBLY

Place the Rubber Gasket (part No. 4) of the Drain Assembly, over the PVC pipe and slide it down until the top of the gasket is below the top of the PVC pipe. Apply a spray silicone lubricant to the inside and outside of the rubber gasket to lubricate it so it slides into place more easily. Screw the Locking Ring (part No. 3) of the Drain Assembly, onto the Drain Body. Tighten the locking ring with the Tightening Tool (part No. 2) until the rubber gasket is seated tightly in place.

Remove the tightening tool and press the Drain Strainer, (part No. 1) into place. This completes the installation. Excluding any subfloor preparation, the job should take about one hour or less.

Let the shower pan set for 24 to 48 hours to allow the silicone to properly cure. Once cured, the wallboard and wall panels can be installed. **EHT**

Editor's Note: *Milton Lemberg is President and Marketing & Sales Manager of Royal Stone Industries. For more information, contact milt@royalstoneind.com or visit www.royalstoneind.com.*

WHEN IT RAINS IT Spores

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APA – The Engineered Wood Association and its member companies provide homeowners with the necessary construction guidelines and maintenance tips to help prevent moisture intrusion problems. If you plan to remodel an existing home or build a new one, visit **www.buildabetterhome.org.** Our site includes more than 70 foundation, wall and roof construction details available in four PDF brochures. You can also find a maintenance plan for existing homes at **www.FreeFromMold.org**. You'll know what to do, when to do it, and how to get it done right. Visit us today and keep the mold from feeding on your home.

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Siding Maintenance and Repairs

Keep your siding in shape for good looks and weather protection.

By Monte Burch

Regardless of the type and material, siding requires maintenance and occasional repairs. Some of these are simple, others a bit more complicated. First, it's a good idea to thoroughly inspect your siding once a year. The best time to do this is in the winter when many of the shrubs around your house have less foliage. Look for blistered, loose or peeling paint, warped boards, cracks, shrunken caulking, broken vinyl, dents in aluminum, as well as any evidence of termites. Prune back shrubs that have grown closer than 2 feet to the house. Pull down, cut and treat any vines clinging to the house with herbicides.

ROUTINE CLEANING

The one maintenance chore for all types of siding is cleaning. Mold and mildew are common problems on any type of siding. This is most common on the north side of buildings, where there is insufficient sunlight. Wet the siding and then scrub with a mixture of household detergent, tri-sodium-phosphate (TSP) and water. A long-handled scrub brush, such as one used for cleaning boats or automobiles, can make this chore easier. Then, lightly power-wash the siding to flush away the cleaner and the loosened materials.

Mold and mildew can also be caused by a too-tight structure that doesn't allow the siding to "breath." Peeling and blistering paint can also be caused by a lack of breathing. As warm, moist vapor from the house flows through the walls, it reaches the cold siding and condenses. Install vents in the siding to remedy this problem. Several different types of vents are available. They should be located between the studs and about 6 inches below the ceiling level. Holes are drilled in the siding for the vent installation. Wait about a month for the moisture to escape and the siding to dry out, then scrape the peeling or blistered area and repaint. In addition to cleaning, different siding materials also have specific maintenance and repair chores. Following are tips for each type of siding.

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WOOD SIDING

The type of maintenance and repair depends on the finish applied to the siding. Natural finished sidings, such as Western Red Cedar, usually require regular applications of a protective oil finish to maintain the original color. This can be applied with a brush, roller or best with a small hand-pumped pressure sprayer.

Peeling, flaking or blistering paint requires removing the old paint in the area. A paint scraper, vibrating sander, or combination of paint heat gun and paint scraper can be used to remove the problem paint. Do not use a blow torch to heat the paint, because the flame can go into a crack in the siding and cause a fire. Before cleaning off old paint, drive any popped nails back in place. After cleaning, fill any cracks with wood putty such as Durham's Rock Hard Water Putty. Prime the area and repaint. One problem is paint also chalks and fades over time, and you may need to paint an entire side of the house to blend the colors.

Breaks, cracks, warped and loose siding boards are also common problems. Clapboard or beveled siding occasionally comes loose at joints and warps or twists. Remove the old nails, clean and sand any joints that are too tight. Then add caulking such as DAP Sidewinder and fasten the siding back in place with exterior self-starting screws in predrilled holes. Set the screws slightly below the wood surface and putty over them.

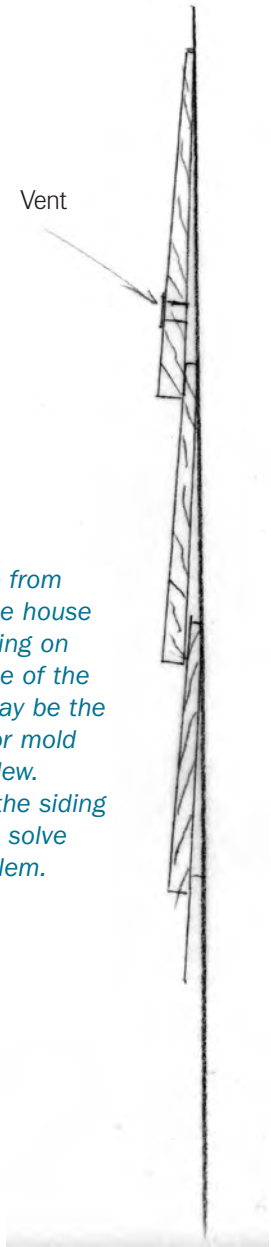
Another clapboard problem is a split. Carefully pry the split apart, squeeze exterior glue such as Titebond III in place and wedge or clamp the crack together. Anchor the split parts back in place with screws. For a hole in the siding, clean out the hole with a small chisel, fill with wood putty, allow to dry and sand smooth.

First step is to inspect the building thoroughly for any damage. Trim away any shrubs or trees, and remove vines.

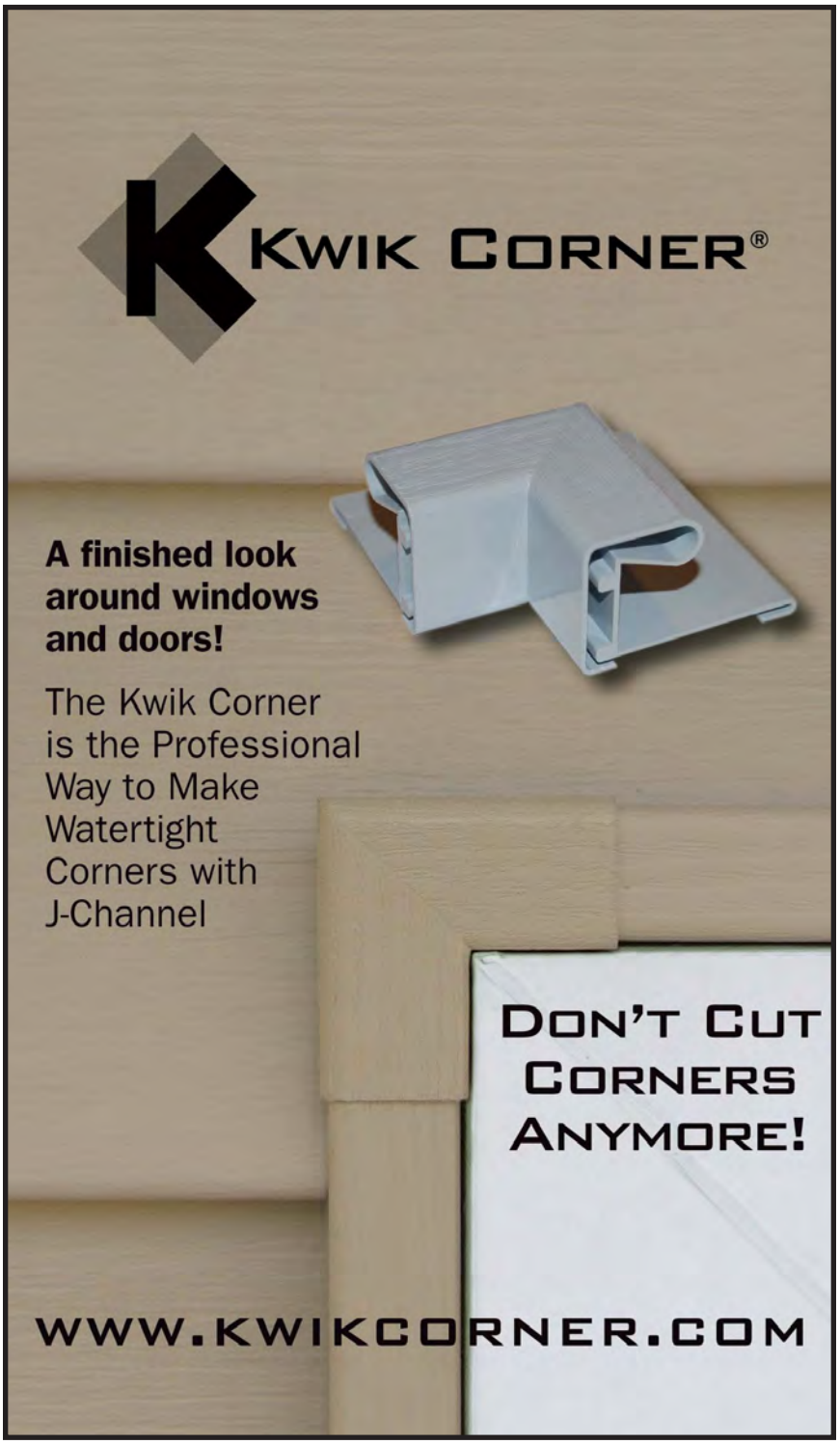
One of the most common problems is mold and mildew. This may be caused naturally on the northern side of a building that doesn't get sufficient sunlight.

In some cases sections of wood or hardboard clapboard or bevel siding may be deteriorated to the point it needs to be replaced. Cut the siding board on both sides of the damage. Start with a backsaw and finish the cut with a wide, sharp chisel. Pull out the nails in the board overlapping the damaged board. Use a chisel to split out the damaged board, and carefully pry out the top edge from the overlapping board. Be careful not to damage the building felt, sheathing or the surrounding siding boards. Cut the replacement siding board to fit, and then drive it up in place so the bottom edge aligns with the surrounding boards. Fasten in place with screws, then caulk and fill cracks and over the screw heads with wood putty.

In some cases you may not be able to purchase older siding



Moisture from inside the house condensing on the inside of the siding may be the culprit for mold and mildew. Venting the siding can help solve the problem.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shapes or styles. If you have a woodworking shop and a planer/moulder such as the Woodmaster Planer/Moulder, you can run your own replacement siding to match the existing siding. The company has a wide variety of moulding knife patterns and can also create knives to duplicate any style siding or trim.

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For instance in one of our remodeling jobs, we could not purchase siding wide enough to match the old siding.

One of the most common problems with board-and-batten or vertical siding of individual boards is a split. Or, plywood siding may have damage caused by an accident. Pry off the battens, and then pull out the nails holding the siding to the studs. Use a block of wood to protect the wood surface from damage during the prying. Remove the defective board or plywood section, and fasten a replacement section in place with stainless steel or other non-corrosive nails. Reinstall the battens.

In some cases whole sections of siding may need to be replaced. If you can't find replacement siding for some older styles, you can make your own with a Woodmaster Planer/Moulder. The company offers a wide variety of molding cutters, and can also custom design a cutter to match your siding or trim style.

ALUMINUM SIDING

Aluminum is one of the most maintenance-free sidings, but it can be damaged. Dents and cracks are the most common

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problems. To repair a dent, fit a self-tapping metal screw with washers or a rubber ferrule. Drill a starting hole in the center of the dent, fasten the screw in place, then use a pair of sturdy vice-grip type pliers to pull and straighten out the dent. Remove the screw and squeeze a bit of plastic aluminum in the hole. Then file and sand smooth. Add a bit of touch-up paint. A crack can be filled in and smoothed in the same manner. Replacing a badly damaged piece of siding usually requires removing the corner caps, prying up the overlapping siding and removing the holding nails. In many instances you will have to start at the top of the siding and remove pieces down to the damaged piece.

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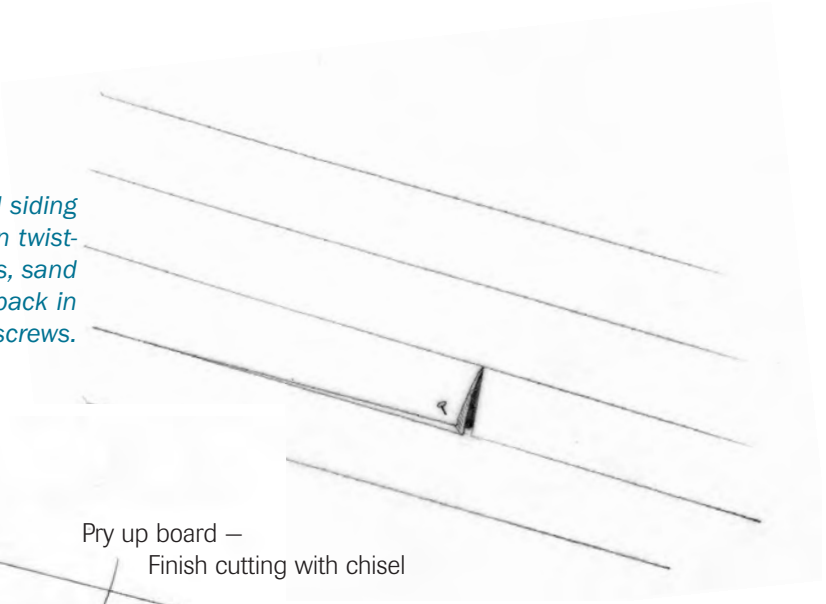
Natural-finished wood siding should have a protective oil finish applied regularly.

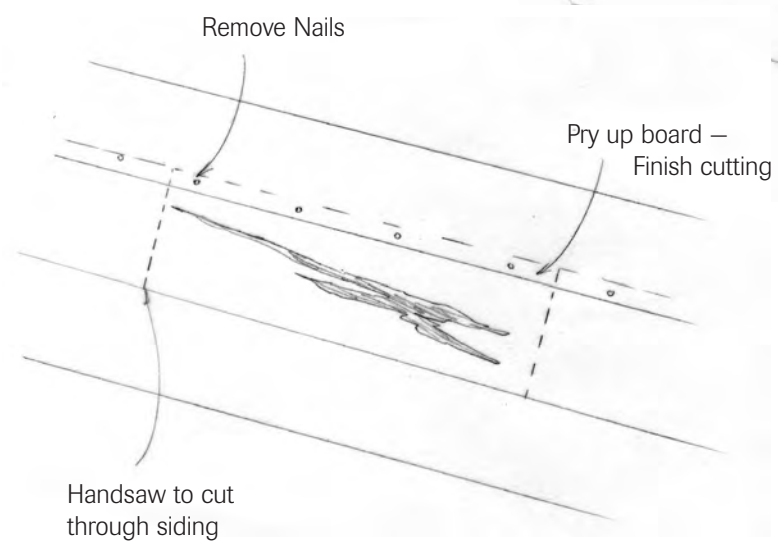
Scrape or remove any peeling, blistered or flaking paint from the wood. Then prime and repaint.

VINYL SIDING

Vinyl siding is almost maintenance-free. It does not dent or need repainting, but it can be damaged easily, especially in cold weather. Remove the corner



Clapboard, bevel or other types of wood siding often separate at the joints, resulting in twisting and warped siding. Remove old nails, sand the exposed end, caulk and fasten back in place with exterior wood screws.



Broken or deteriorated siding should be removed by first cutting on both ends of the damaged area with a backsaw and then using a chisel to complete the removal. Caulk the edges of the joints and replace with a matching siding piece, fastening with exterior screws.

blocks and, starting at the top, remove succeeding pieces until you reach the damaged piece. You probably should number the pieces as you remove them so you can easily replace them in order. Remove the damaged piece and replace with a new one. Make sure the siding pieces interlock properly. Don't drive the siding nails or screws in tightly, but leave a slight space for expansion and contraction of the siding. In some instances the color of the replacement siding may be a bit different, but will usually weather to blend in.

Another common problem with vinyl siding is a cracked or broken corner post. The old post can be removed and replaced, but you will need to loosen and pry out the ends of all siding pieces to get at the corner-post fasteners. A simpler solution is to cut the flanges off

To repair a dent in aluminum siding, insert a self-starting screw and pull out the dent by pulling out the screw with pliers.

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a replacement corner post, slip it over the damaged corner post and fasten in place with pop-rivets. Then paint the rivet heads to match the siding.

OTHER SIDING MATERIALS

Brick siding may require an occasional coating with masonry waterproofer. And, if badly deteriorated, may need the joints tuckpointed. Cracks and holes in stucco siding can be repaired with a special mortar such as Quikrete Stucco Crack Repair. Follow product directions, then paint to match. **EHT**

A damaged aluminum or vinyl corner can be repaired by cutting the flanges off a replacement corner, slipping the corner over the existing damaged corner and anchoring with pop-rivets.

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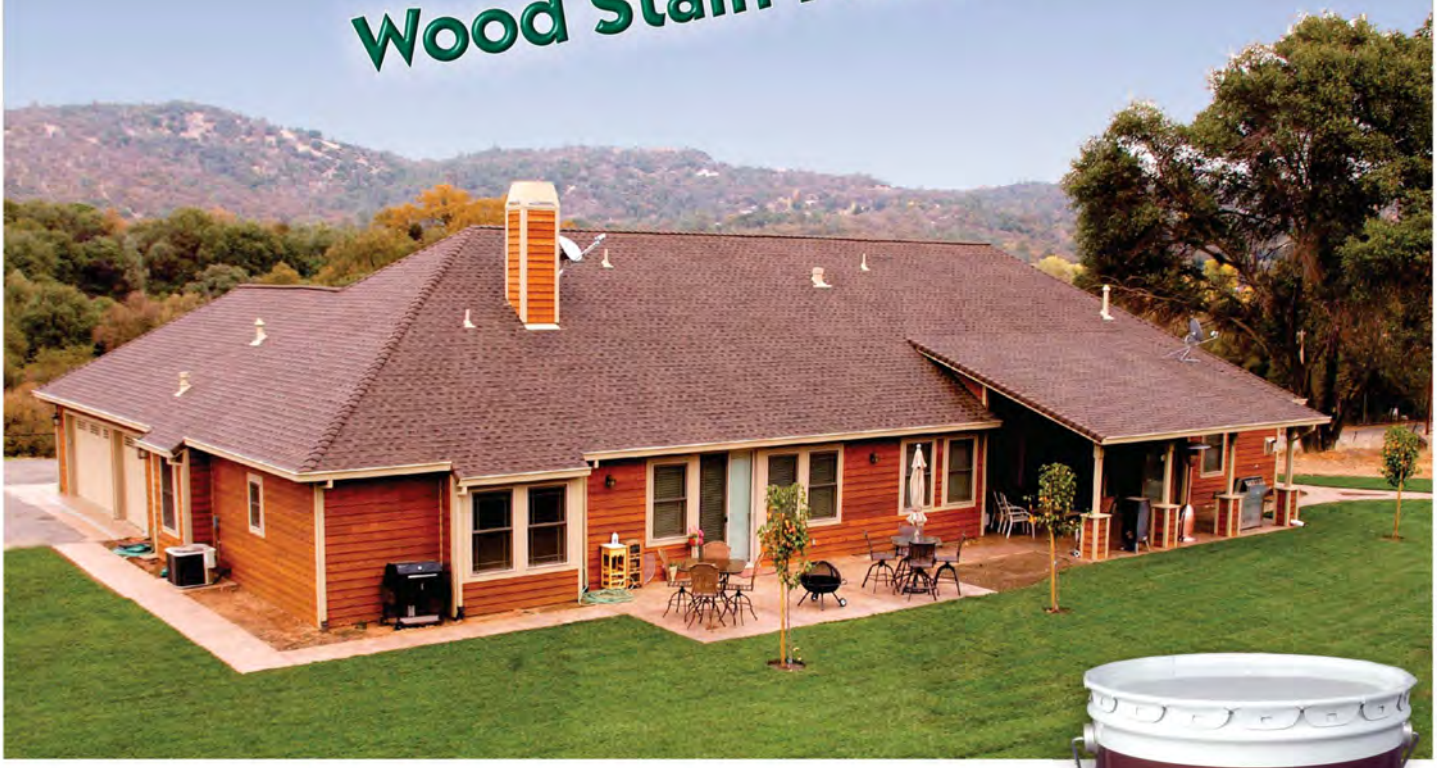

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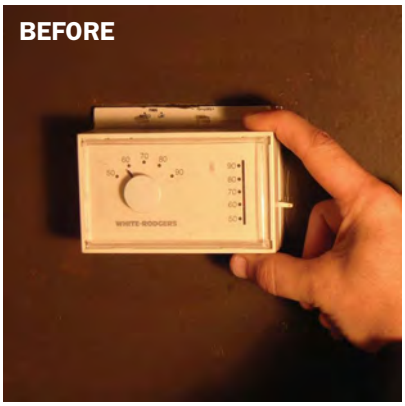

By Tom Matthews

If you've not yet upgraded your thermostat to a programmable unit, then you're behind the times like parachute pants. You're probably throwing away money on unnecessarily high energy bills. And you aren't doing Mother Earth any favors, either.

Programmable thermostats automatically adjust your home's temperature settings several times a day to fit your lifestyle. These units contain no mercury and are more accurate than manual thermostats. According to the U.S. Department of Energy, when used properly programmable thermostats can save about $150 per year. This means the extra money spent on a programmable unit is usually recouped in a year. Plus, these thermostats are better for the environment, since using less energy helps reduce greenhouse gas emissions associated with energy production.

When selecting a thermostat, look for the Energy Star logo, which is the U.S. government's cattle brand indicating the product meets strict energy-efficiency guidelines. These thermostats offer four pre-programmed energy temperature settings that anticipate when the system should scale back heating or cooling. In the winter, program the heat to kick on during your commute homeward, so you step into a warm, comfortable house. In the summer, keep air conditioning low in the morning so your system isn't cooling an empty house while you're at work. The versatile programming also benefits the many homeowners who work outside the home during the week but keep a different schedule on the weekend.

FEATURES AND MODELS

All of the Energy Star-qualified programmable thermostats include four default program periods per day, allowing you to save money while you're away or sleeping. They maintain accuracy within 2 degrees to keep the temperature at an even level. Programmable thermostats typically feature digital, backlit displays; touch-pad screen programming; voice and/or phone programming; "hold/vacation" features; indicators that notify when it's time to change air filters; and indicators that signal malfunctioning of the HVAC system. With so many options and features, it's easy to create a heating/cooling schedule to fit individual needs.

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7-day models. These units are the best choice if your daily schedule has a tendency to change. By letting you set different programs for different days, these models offer the most flexibility—with four possible temperature periods per day.

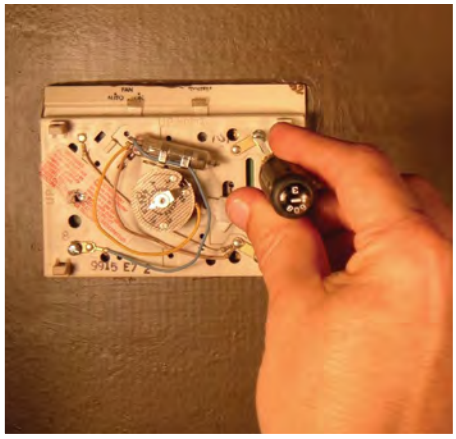
5+2-day models. These units use the same schedule every weekday, and another schedule for weekends.

5-1-1 models. This third type allows you to keep one schedule Monday through Friday, another schedule on Saturdays, and a third on Sundays.

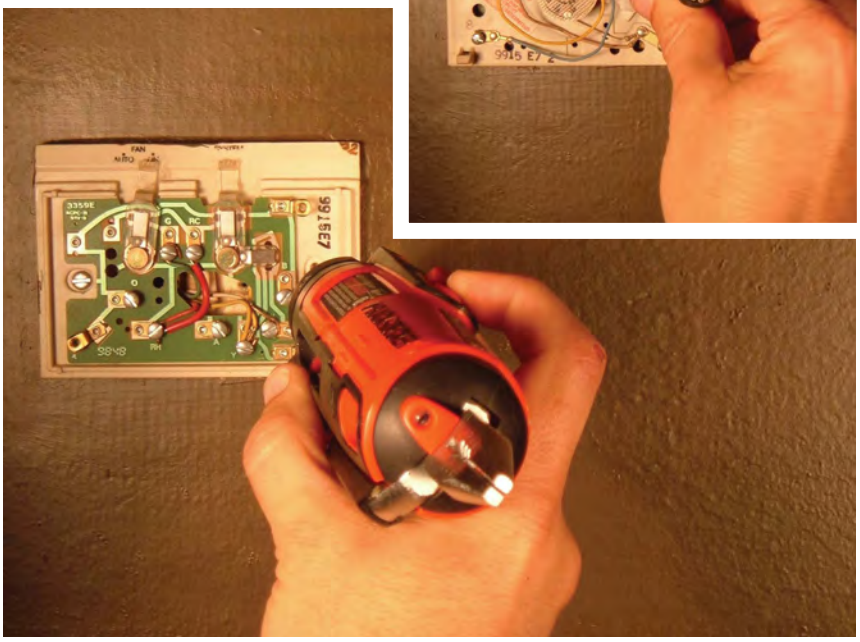
INSTALLATION

Thermostat installation is a fairly simple chore. Typically, all that's required is a slotted screwdriver, small Philips screwdriver, hammer, electric drill/driver, a 3/16-inch bit and two AA batteries. First step is to cut off the electricity to the thermostat and furnace. Remove the existing thermostat cover, thermostat and wall plate, which are usually fastened with screws and plastic push tabs.

Wires may be attached to the thermostat or wall plate with mounting screws. Each wire will be wrapped in color-coded insulation, which corresponds to the color-coded terminals on the rear of the new thermostat (or wall plate). Additionally, when connetected to the existing thermostat, these wires are usually marked with a code letter, i.e. "W," "G," "Y," etc. It may help to label the wires to avoid confusion. The number of wires in your system can vary from two (for heat only) to as many as eight. Clip the wires so they do not slide back through the hole. Then disconnect the wires from the old unit.



Take off the cover and unscrew the thermostat of the old unit.



Disconnect the wires and then unscrew the wall plate from the wall.

SEVEN TOOLS IN ONE

For this thermostat replacement, the EHT staff used Black and Decker's new Powered Multi-Tool. The new tool includes a power-assisted screwdriver, LED task lights, a cable-jacket slitting tool, a non-contact voltage detector, and needle nose pliers with an integrated 12- to 18-gauge solid wire cutter and stripper. Purchasing all these tools individually would cost approximately $60, while the Powered Multi-Tool retails for only $39.97—and you don't have to pack a work kit full of seven different gadgets. Powered by a 9-volt alkaline battery, it's a handy device for all sorts of around-the-house electrical jobs. For more information, visit www.blackanddecker.com or call 1-800-54-HOW-TO.

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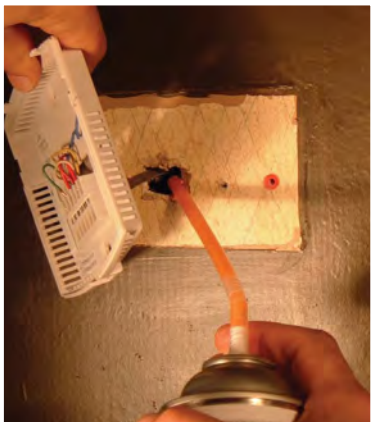
Pull out the wires and clip them so they don't slide back through the hole. Then screw them to the color-coded terminals on the new wall plate.



If the hole in the wall is larger than necessary, seal it with insulation.

Attach the wires to the mounting screws of the new unit. Ignore any wires that may be present but were not connected to the old thermostat. Push the excess wiring back into the hole. If the hole in the wall behind the wall plate is larger than necessary for the wiring, use some insulating materials to plug the wall cavity. This will prevent hot or cold air from drafting into the back of the thermostat and affecting its temperature reading.

Then level and plumb the wall plate with a torpedo level and fasten to the wall. Mounting in drywall requires first predrilling the anchor holes with a 3/16-inch bit and hammering in drywall anchors to house the screws. Or, you may get lucky as in the

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installation shown, where the pre-existing drywall anchors from the old thermostat happen to line up with the screw holes on the new unit. If no new drilling is required, simply line up the mount holes and drive home the screws.

With the unit shown, the thermostat attaches and detaches to the wall plate via press-release tabs at the top and bottom of the unit. Make sure the thermostat is set to OFF and the fan switch is set to AUTO. Insert the two AA batteries. Switch on the main power to the furnace.

Program the thermostat according to the maufacturer's guidelines. You'll soon be saving energy, saving money and helping the environement. **EHT**

Use a a torpedo level to level and plumb the wall plate. Anchor it to the wall and then fasten on the thermostat. This unit simply snapped on with plastic tabs.

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Tool Transport

The right truck cap setup offers protection, convenience and style.

By Larry Walton

It's no accident that today's heavy-duty pickup trucks have nicer interiors and greater cargo hauling capacity than ever. Even the auto manufacturers are paying attention to the guys like my brother, Chad, who use their trucks for both work and play.

Chad needs to haul tools with his truck but he wanted to get away from the daily grind of hooking up and towing our tool trailer. As a long-time contractor, he has been through several tool hauling set-ups over the years (pickups with canopies, trailers, work vans) so he knew he wanted a truck cap on his pickup.

Like a lot of other business owners, his work truck is also his daily driver, his grocery getter and his vacation transportation. That's why any truck cap would have to match his lifted F-350's look. Styling was as important as tool security, and overall looks ranked at least as high as loading and unloading ease. When it came to choosing the right truck cap, he was not ready to take function over form.

Another requirement for the truck cap was that it not be obviously commercial in appearance. This was not just for style points, but it was also to keep would-be tool thieves from guessing what was inside. Stealth storage was a top priority.

That's why he was very happy to find that A.R.E. had a cap for his truck in their CX Series. Not only was it cab high, form fitting and color-matched to his truck, it was also available with side toolboxes, which is a very practical design for construction workers and hobbyists alike.

Rather than windows in the side doors, A.R.E.'s side toolbox

MATERIALS:

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- Jigsaw
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option is designed with aluminum recessed panels where the glass usually lives. The panel inserts both deter prying eyes and secure tools, fishing gear, or whatever it is you want to haul.

Often truck cap side doors are practically useless, especially for lifted trucks. That's because it's tough enough to reach over the sidewalls of the bed, let alone being able to grab something heavy out of the bed and hoist it back over the bed walls. Also, it doesn't take much experience or imagination to know what havoc tool belts and jean rivets can wreak on the paint job.

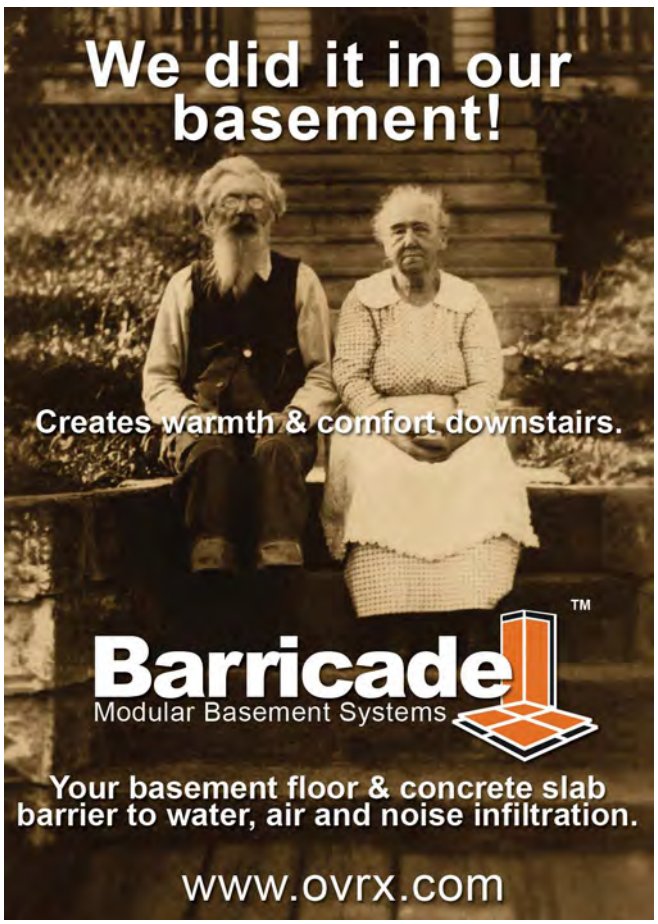
The side tool boxes, however, make is easy to access usable storage space. The floors of the tool boxes are slightly below the opening, making this a great space to keep any number of tools or toys readily reachable when the doors are open.

> *"WE DECIDED TO INSTALL A SIMPLE WALL-TO-WALL SHELF WITH SLIDERS THAT WE'VE USED IN THE PAST."*

When we ordered the truck cap from A.R.E., they asked for truck make, model, year, cab and bed configuration and the exact paint code from the sticker in the door jamb of the truck.

Harley Christoffersen of Canopies Plus, our local A.R.E. dealer, called us when the truck cap was in his shop to set up an installation appointment. The dealer installed the unit, making sure the weather seals and lights were working properly.

Eventually Chad wants to install a cargo tray such as the Gorilla Slide (www.highwayproducts.com), but while he's waiting for funds to be available we decided to install a simple wall-to-wall shelf with sliders that we've used in the past. The idea is to maximize cargo capacity and to minimize effort getting at tools on the job site and toys in the field. EHT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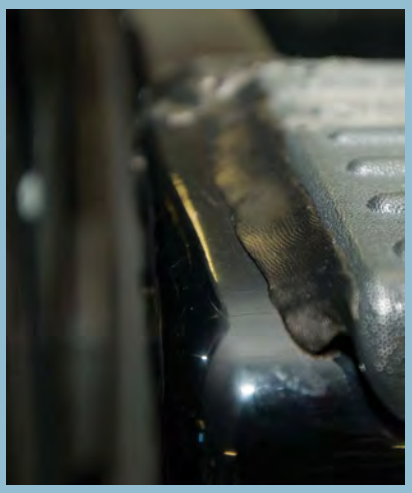
TOOL TRANSPORT

Harley Christoffersen of Canopies Plus, an A.R.E. dealer in Eugene, Oregon, preps the bed rails for the weather seals.



Christoffersen used 3M Window-Weld to build a little transition ramp at the end of the bed rail protectors on the F-350. He knows from experience that this step-down has too many right angles for the weather strip to conform and seal without some help.

One of the secrets to a successful truck cap install is getting a wiring harness for your application.

The wire for the hood lamp is a good place to tap into for the truck cap dome light.

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TOOL TRANSPORT

You probably don't have a fork lift with extended, padded forks, but a friend on each corner will do.

A simple square cut on a 2x4 is all that's needed to make the cross members for the horizontal deck.

of the bed. We used cedar shims to fill the void before fastening the parts with 3" drywall screws.

Eleven year old Garrett Christoffersen, an experienced canopy man, installs the clamps that attach the truck cap to the bed rails.

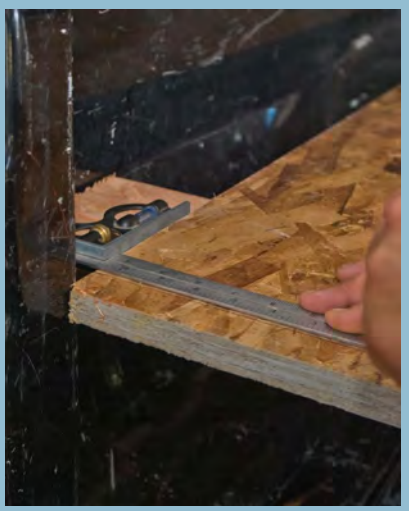
Two-by-4 cross supports fit into pockets in the bed walls.

A 2x8 on edge was almost the right height to make a center partition/support running the length

We slid a sheet of 3/4" tongue and groove decking into position on top of the cross supports.

Aluminum panel inserts on the side doors look like tinted glass on this black truck.

Side access tool boxes make a great place to stow gear.



The shelf had to be fit to the irregular contours of the pickup bed walls. A combination square can be used to transfer marks.

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TOOL TRANSPORT

We measured the widest gap and cut a block of wood to match the gap.

We then used the block as a gauge to scribe the shelf to fit the bed walls.

A jigsaw does a good job of cutting the scribe lines on the shelf.

After adjusting the shelf with some back cuts, we used it to trace a layout for the other side of the pickup bed.

You can adjust the foot of the jigsaw to make these cuts at an angle or if you are impatient like my brother, you can just tip the jigsaw at an angle to match the curve of the bed walls.

With both pieces in place against the bed walls, we tipped them up at the seam so the tongue and groove could lock together.

Drywall screws secure the shelf to the cross members.

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TOOL TRANSPORT

We made a slider for the top shelf by cutting a piece of 1/2" wafer board to fit between the built-in tool boxes. We added 1-by-2 rails to the outside perimeters and fastened them with drywall screws from the bottom side.

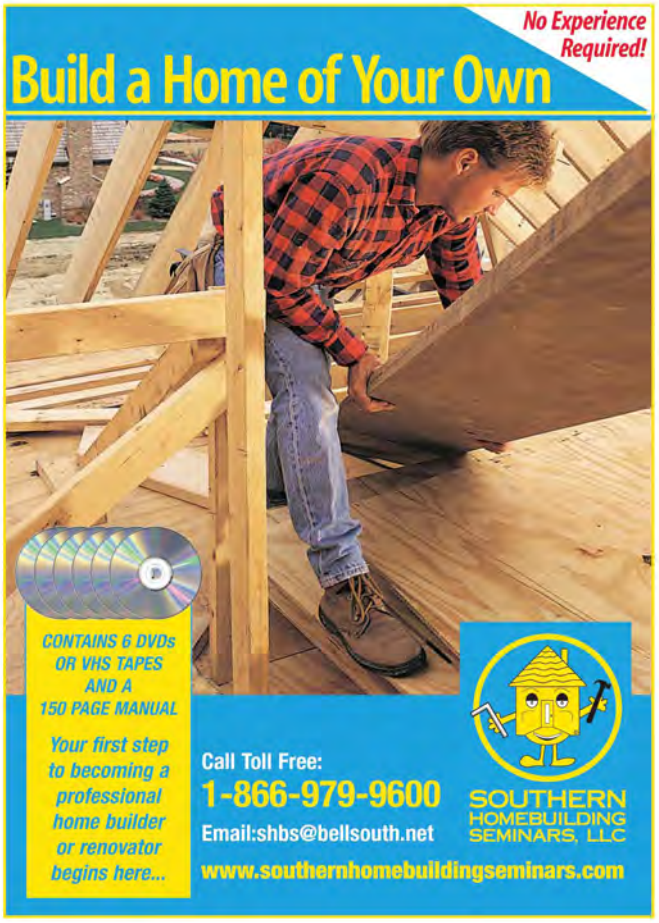
With the slider in place, we screwed down some 1-by-2 rail guides to keep it centered on our bed-sized shelf.

The side doors with built-in cargo boxes make a great place to haul frequently used items so they are easily accessible.

Sliders above and below the shelf make it easy to pull tools from the bed without climbing inside.

A well organized truck cap setup makes life easier on the jobsite.

It takes little effort to transform the tool hauler into a weekend warrior for a quick trip to the Oregon dunes. **EHT**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Hi-Velocity Fan Coils, Green Technology

- Utilizes EPC Energy Smart Motor Technology
- Cooling capacities ranging from 1.5 ton to 5 tons
- Heating capacities up to 140,000 btuh
- Comes pre-wired for
  - Heating, Cooling
  - Humidification Control
  - Ventilation
  - Constant air

Energy Smart, Green Motor Technology

- Hi-Efficiency, reduce operating costs up to 50%
- Programmable EPC inverter drive, utilizing mass flow technology to supply 1.5 to 5 tons of air flow

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Residential
Commercial
Multi-Family

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Electrostatic MERV-11 filter

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- With our pre-fabricated knock outs, select the desired position and within minutes it is ready for installation
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- Integrated Site glass
- Integrated access ports
- Integrated external freeze stat
- Two L mounting brackets

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- Save up to 25% on duct material costs and up to 50% on duct installation costs
- Direct replacement for two 2" outlets

HE Vent Plate

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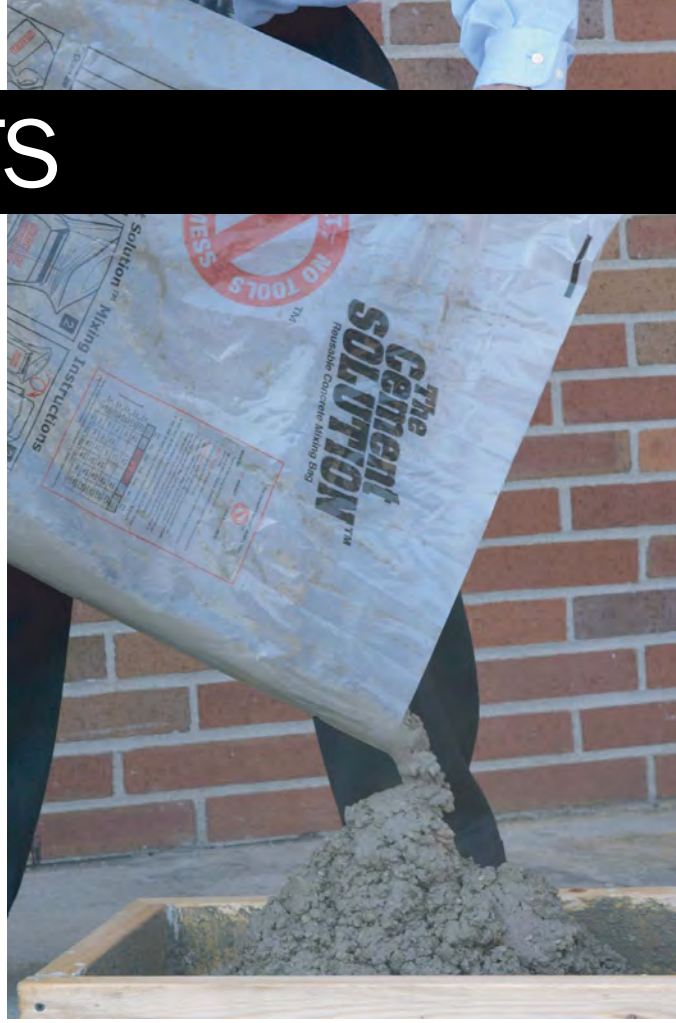

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